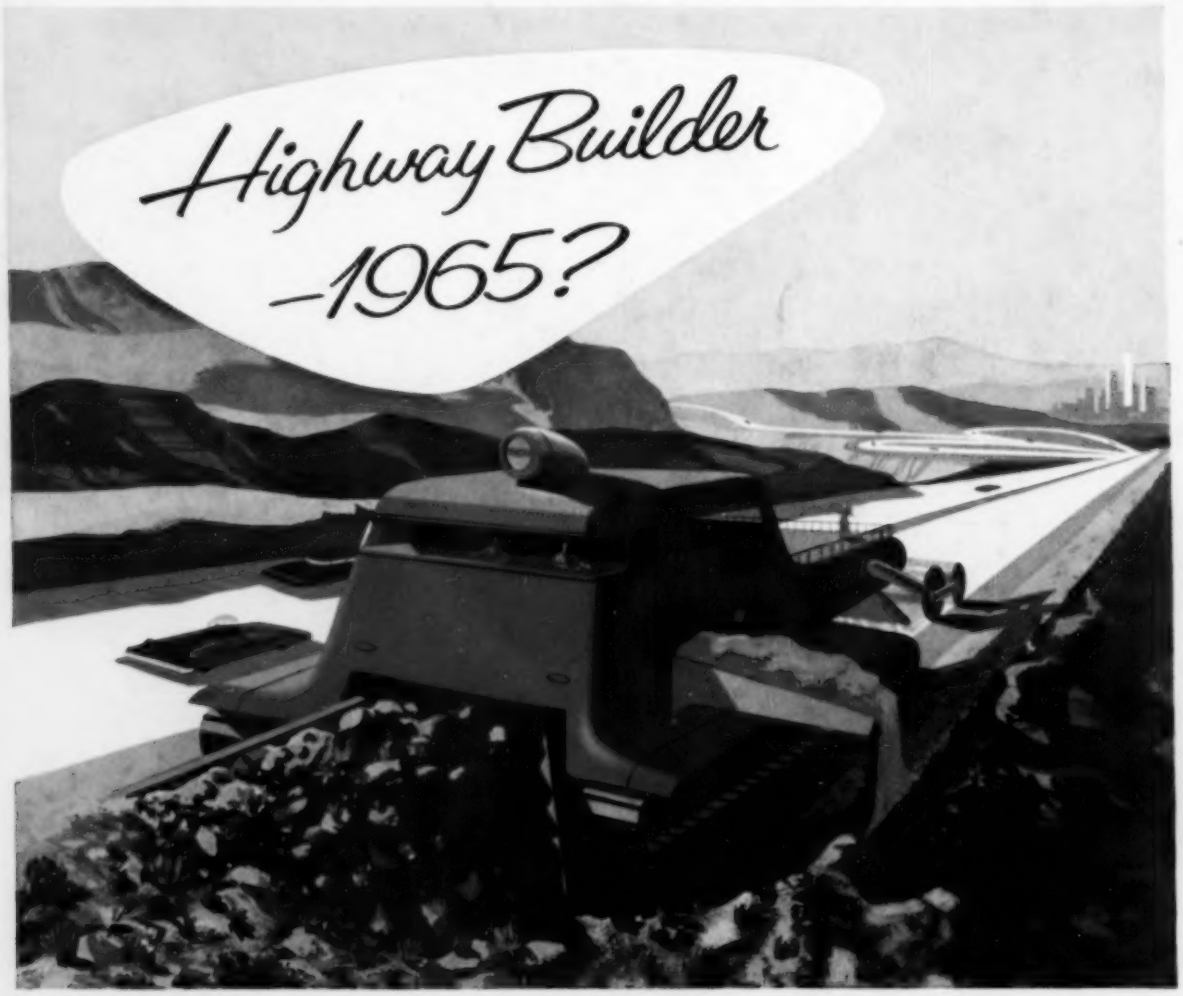
the Iron Age
A Chilton Publication
THE NATIONAL METALWORKING WEEKLY • AUGUST 11, 1955

What's the outlook for rapid tax write-offs?
See page 47

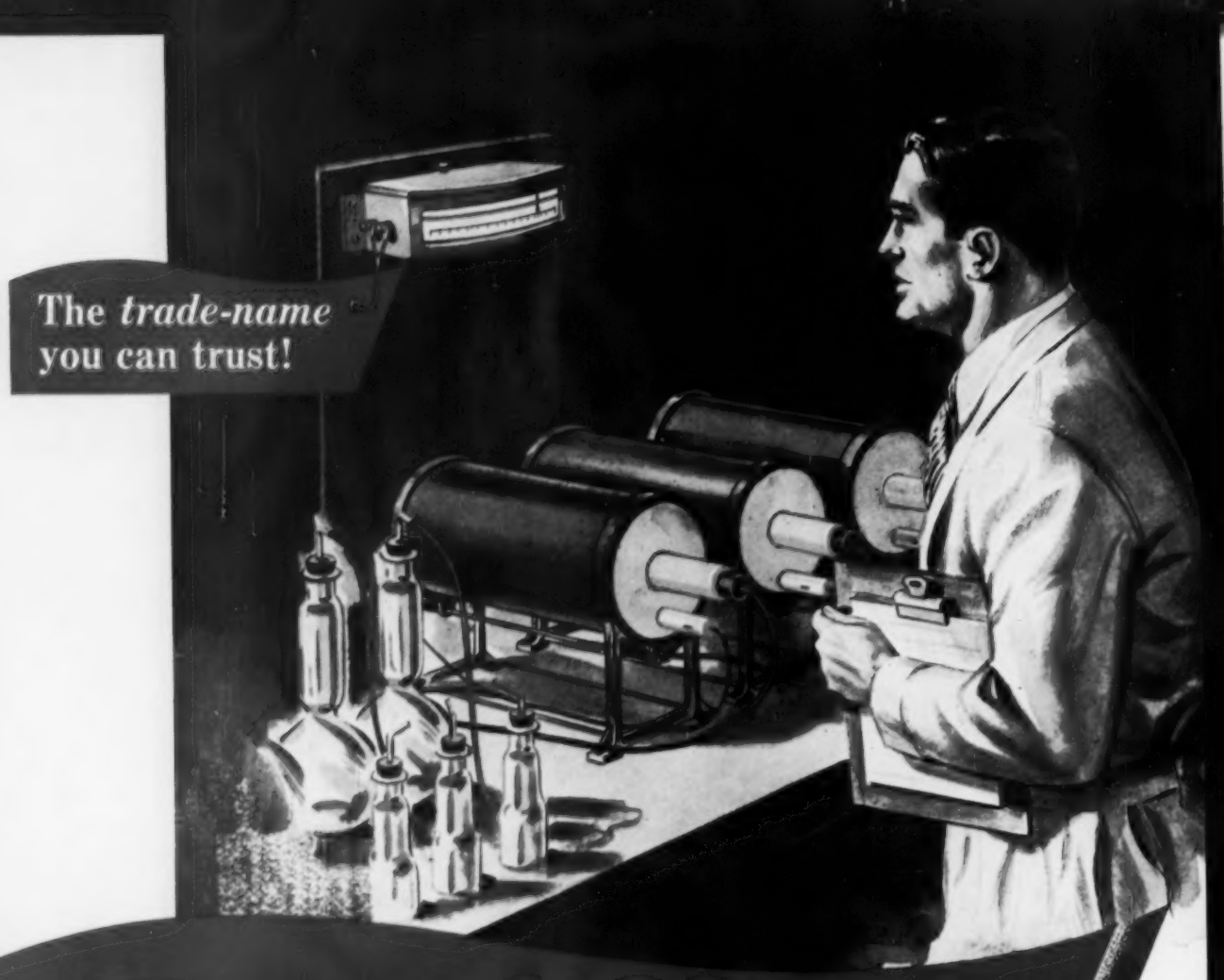


NEW DEPARTURES OF TOMORROW

Today: New Departure ball bearings are used in power shovels, trucks and similar heavy-duty equipment, because they require no special attention and virtually no maintenance. Frequently they outlast the machine itself.

What a simple matter road building would be if it were reduced to a single machine that levels, grades and paves . . . all in continuous operations. Such future prospects are often made practical through New Departure ball bearings. With New Departures, moving parts are held in close alignment while handling loads from any angle. Delays for adjustment and maintenance are eliminated. That's because these ball bearings are designed for high capacity and manufactured to close precision tolerances . . . by the company that has originated many of the greatest advances in ball bearings. So if you are designing or improving a product for efficiency and endurance, call New Departure for *your* ball bearings.

NEW DEPARTURE
DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT



Chromel-Alumel

THERMOCOUPLE ALLOYS

FOR ACCURACY!

Chromel-Alumel thermocouple alloys are unconditionally guaranteed to register true temperature—e.m.f. values within close specified limits . . . ±4°F. from 0° to 530°F.; ±¾% at operating temperatures from 531° to 2300°F.

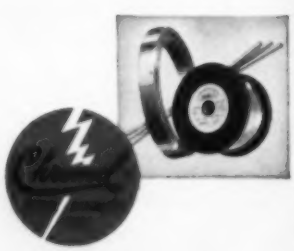
FOR DURABILITY!

They're highly resistant to oxidation, extremely sensitive to temperature variations. And they maintain their fine accuracy over a wider range of temperatures for far longer periods of time than any other base metal material.

FOR ECONOMY!

Despite their finer accuracy, higher temperature range, and longer useful life, Chromel-Alumel thermocouple wire costs the user no more than ordinary base metal materials . . . and in many cases, they actually cost less!

Ask for them by name! Your instrument manufacturer or pyrometer service company can supply your immediate requirements for plain or insulated wire and assembled couples, as well as Chromel-Alumel extension lead wire to eliminate "cold-end" errors. So ask for them by name . . . "Chromel-Alumel" thermocouples . . . the trade-name you can trust!



Chromel-Alumel thermocouple alloys are produced exclusively by

HOSKINS MANUFACTURING COMPANY

4445 LAWTON AVENUE • DETROIT 8, MICHIGAN

WELDING STEEL PLATES FOR WATER-SUPPLY FITTING—This huge "Y," being welded from Bethlehem plates, is a typical example of a welded structure in which the fabricator's prime responsibility is making a sound weld. Bethlehem plates are uniform in quality, so that with good welding practice, sound welds are assured. Bethlehem plates come in a full range of sheared and universal mill sizes. Just write or phone the nearest Bethlehem district sales office for complete information.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

The Iron Age

Vol. 176, No. 6 August 11, 1955

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Address mail to 100 E. 42 St., N. Y. 17, N. Y.

NEWS DEVELOPMENTS

FAST TAX WRITE-OFFS FACE CHALLENGE — P. 47
Sec. Humphrey leads fight to curtail tax amortization. He charges that write-offs will cost U. S. $880 million in taxes this fiscal year alone. Wide diversification leads to charges that program is abused and that some industries not engaged in defense activities are getting fat tax concessions.

CONGRESS GAVE PRESIDENT A GOOD DEAL—P. 50
The Iron Age box score on what Congress did and did not do shows that it gave Ike most of what he wanted. Appropriations for Government spending will be unchanged but less than what Ike asked for. Nothing was done about the road building program. A new minimum wage was adopted. AEC funds were cut.

KEEP YOUR EYE ON CED POLICY STATEMENTS—P. 53
The privately-sponsored Committee for Economic Development has been tackling the big dollar expenditures which affect us all for 13 years. Its timely policy statements, issued after months of research, are easy to understand, geared to stimulating industry leaders' thinking on current national fiscal issues.

GIANT EXTRUSION PRESS JOINS THE AIR FORCE—P. 57
The largest extrusion press, in physical dimensions, ever built in this country is on its way to Calif. for service in the Air Force heavy press program. The tremendous size caused quite a shipping problem which was finally solved by specially built and revised railroad carriers operating on a carefully selected route.

WASHINGTON HOLDS OFF DEFENSE CUTBACKS—P. 69
Peace talks have eased tension between United States and Russia. President Eisenhower wants peace and all that goes with it. But the President isn't going overboard on Russian friendship. He wants proof of the Reds' peaceful intentions first. Meanwhile the military establishment will be kept strong and modern. Defense spending will hold at about $35 billion.

HOW TO REDUCE MACHINE TOOL DOWNTIME—P. 75
More careful consideration of specific work conditions would cut the electric failures that cause so many work stoppages. Many machine tool users are pushing for sealed, self-cooled motors as the answer to dust entry and bearing failure. Extra power allowances would reduce overloading. Builders won't develop models perfect for all conditions, will reduce trouble spots.

IN METALWORKING

ENGINEERING AND PRODUCTION

POWDERED MATERIAL REDUCES BEARING WEAR — P. 87
Can worn corroded machine tool bearing surfaces be reconditioned while the machines run? One company does it by adding micro-sized particles of a copper-lead mixture to the regular machine lubricant. Other uses for the powdered mixture include coolant additions for longer tool life and to reduce valve wear.

AUTOMATIC SCALE SPEEDS PACKAGING — P. 90
Primary object of any bag loading operation is a quick, accurate fill with minimum spillage. In filling 100-lb bags with iron powder used to coat welding electrodes, an automatic scale weighs and discharges the correct amount of powder every time. Filled bags move via conveyor to a machine that sews them shut.

INTEGRATED FASTENER SETUP CUTS COSTS — P. 92
Faster handling of special orders, lower inventories and metal costs are gained from an integrated setup for producing fastenings. Ferrous and nonferrous billets are cast from induction furnaces, extruded into bar, rod and wire on a 1650-ton press. Extrusions are then drawn to size for fastener production. The setup also provides an assured source of metals.

HOW TO FABRICATE ARC-CAST MOLYBDENUM — P. 95
Good high temperature properties of arc-cast molybdenum and arc-cast molybdenum alloys can be obtained through use of proper fabricating techniques. High speed steel and tungsten carbide tools have given good results in machining. In drawing and spinning, both metal and tools should be heated. Good welds are obtained using arc, resistance and flash welding.

TESTS ON CONTROLLED TEMPERATURE ROLLING—P. 100
Deep drawing stainless can be a problem. The preferred grain orientation resulting from cold rolling makes it even tougher. A suggested solution is controlled temperature rolling. This process rolls sheet at 500°F and produces a random orientation. Transverse and longitudinal properties are more compatible.

MARKETS & PRICES

BUILDING: REBAR BOTTLENECK LOOMS — P. 49
Manufacturers of reinforcing bars for concrete structures are having their best production year ever. But construction boom keeps demand well ahead of supply. Many construction men don't seem worried. They should because Rebar will be one of the tightest fourth quarter items.

WAREHOUSES FINALLY ADMIT BUSINESS BOOM—P. 52
The perennial conservatives—steel warehousemen—finally wax optimistic. But they actually have to because figures show that this is a boom year for them as well as the rest of the industry.

ENGINE BOOM PUSHES VALVE SALES WAY UP—P. 55
Boom in auto and power mower sales is being shared by makers of engine valves. Valve sales are at peak heights. But new high compression engines have demanded new heat resistance and strength qualities in valves. Special alloys have had to be used. And keen competition means makers must watch their costs while meeting rigid new standards.

SUMMER ONLY PUTS MORE PRESSURE ON STEEL—P. 135
Net effect of summer vacations and slowdowns has been to further tighten steel supply. Automotive demand has not let up. Construction continues strong. But the mills have had to close overworked furnaces for maintenance repairs. Cut in hot metal in the face of heavy orders has meant more use of scrap. Situation has sent scrap prices zooming.

PRODUCT SHIPMENT COSTS HIKES LIKELY — P. 136
Cost increases are likely on shipments of sheet, coil strip, and other steel products by rail and truck in the East and North Central states. ICC proposal includes hikes of up to 12¢ per 100 lb in the minimum rates for shipments up to 750 mi. Contention is that both railroads and truckers need more revenue.

NEXT WEEK:

OFFER VARIETY OF SPECIAL TUBE AND PIPE SIZES
A new tube and pipe making installation can provide wall thicknesses from ¼ to 3 in., diameters from 5½ to 16 in. and lengths up to 80 ft. All products are seamless and made on a large or small quantity basis. The process uses hot pierces, elongates and equalizes cast steel ingot in a wide variety of analyses.

WHAT DO AUTO LABOR CONTRACTS REALLY SAY?
Here's an expert analysis of the historic auto labor pacts which granted the principle of supplementary unemployment pay. Did Ford, originator of the pact, sign away a guaranteed unemployment plan, or did it win a calculated victory giving Walter Ruether the publicity but retaining important management rights?

MEET "LITTLE STEVE," A NEW, SPACE SAVING, LOW COST AUTOMATIC PLATING AND IMMERSION PROCESSING MACHINE

Here's What "Little Steve" Can Do

- ELECTROPLATING
- ANODIZING
- BLACK JAPANNING
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- ELECTROTYPE PLATING
- PLASTIC COATINGS
- HARD CHROME PLATING
- PHOSPHATE COATINGS

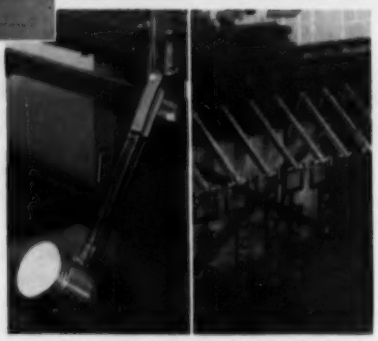
UP TO 40,000 PIECES PER DAY
540 RACKS PER HOUR

Yes, this new immersion processing machine by Stevens can process up to 40,000 pieces per day – and it has a variety of other uses too.

Ruggedly built "LITTLE STEVE," the hit of the 4th Industrial Finishing Exposition, can be obtained at a surprisingly low initial cost. It is ideal for large or small companies for it will fit many production cycles. It uses an arm as a rack or will take racks for small parts.

Being of small size it offers no floor space or load problems; involves low solution expense and means a small capital investment. It can be used easily as a laboratory testing machine.

For further information about "LITTLE STEVE" write for illustrated folder or call your local Stevens sales engineer.



A single part can be placed on each carrier arm as shown in the illustration above or racks of numerous parts can be used.

If a larger production model is desired the "Sgt. Steve" unit, using the same basic design, will provide the answer.

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HOW A BRUSH SHAVES for cleaner-cutting blades

Power brushing idea by OBA to improve your product

Here's a cost-saving idea if your products require smooth finish.
The knife blade shown is the kind used to cut paper and wood veneer.
To make clean cuts, the face of the blade must be extremely smooth . . . free of whisker-like particles left by previous grinding operations.

Here's how it's done: The flat knife is held on a magnetic chuck . . . moved back and forth under rotating Osborn Fascut® Brushes. Fine metal whiskers are removed in a few passes . . . grinding marks blended into a smooth surface.

What's your finishing problem? An **O**sborn **B**rushing **A**nalysis will show how your power brushing can cut costly manhours from your finishing operations. Call us today for an **OBA.** *The Osborn Manufacturing Company, Dept. F-36, 5401 Hamilton Avenue, Cleveland 14, Ohio.*

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Navy Pier, Chicago
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Osborn Brushes

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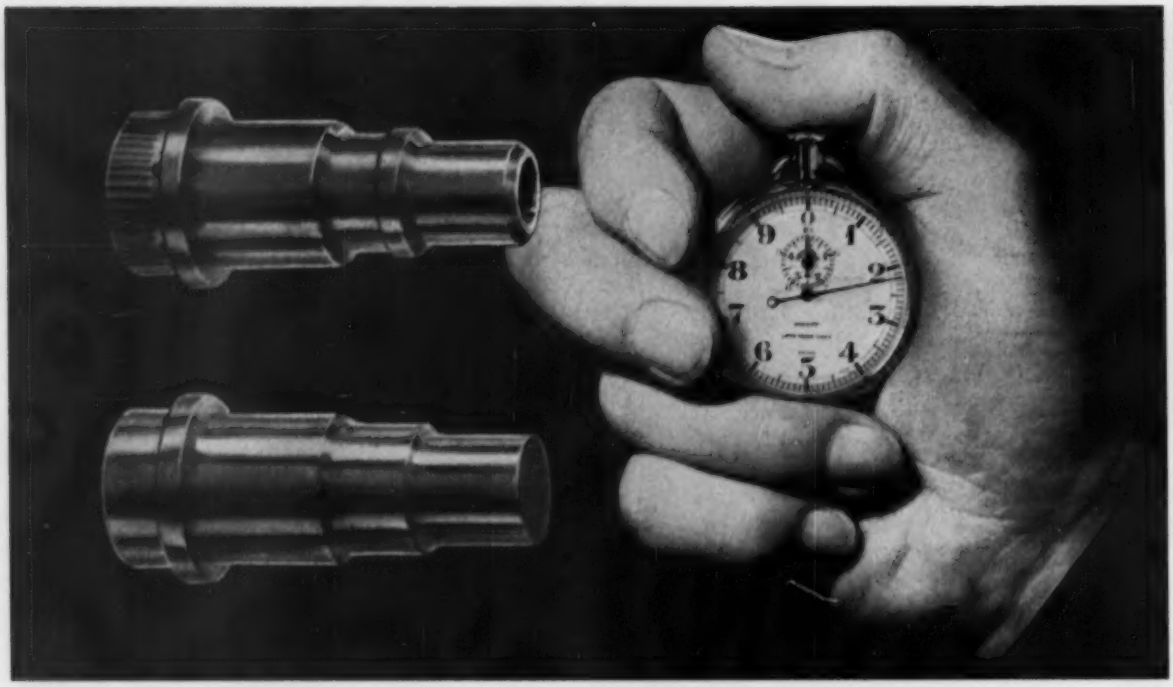

Finished 50% faster

Using Ledloy from Ryerson

By the time the B-1113 piece was finished, you'd be halfway through a second Ledloy piece. Such greater speeds and feeds are possible with Ledloy because Ledloy contains a *built-in lubricant* which substantially reduces the friction between the steel and the cutting tool.

That built-in lubricant is *lead*—so finely dispersed through this free-machining, open-hearth steel that you can't see it with a microscope. The addition of this small percentage (.15-.35) of lead has no effect on the mechanical properties of the steel EXCEPT to greatly increase machinability.

Ryerson Ledloy machines up to 50% faster than B-1113 . . . tool life is extended as much as 200% . . . and net savings of 25% and more are effected. And Ledloy machines to an unusually clean, smooth finish—case hardens effectively —and bends, crimps, swedges or rivets easily.

Ask your Ryerson representative for the facts about Ledloy or write us direct for engineering data. Ryerson was the first to stock Ledloy and today your nearby Ryerson plant carries the world's largest stocks of Ledloy rounds, squares and hexagons in a wide range of sizes for immediate shipment when you call.

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Indexed in the Industrial Arts Index and the Engineering Index.

ABP

Editorial:

How To Help Your Competition

◆ THIS INDUSTRIAL BOOM we are in is the real McCoy. It is no flash in the pan, and it won't run its course tomorrow. We are making up for time lost in 1954 plus the long term growth factor.

Even under such fine conditions for individual and company growth, there are many in business who are doing all they can to help their competition. If you want to join this group, here is how to do it:

Don't Add Salesmen: This is a sure fire way to help your competitor. In these times it is well to cut your sales staff to the bone. And if you want to make a real thing out of this, make no provision for proper sales training.

Putter on Details: When things call for decisions and executive action, put that all aside. Instead get yourself all wrapped up in how many pencils and gem clips you will need for next year. Also see that the fellow you hired to do some of the detail gets a good going over every day from you. In this way you are bound to give a breather to the company which is struggling to take your sales position.

Cut Appropriations: Here is a place where you can temporarily impress the management; at the same time you can make sure that you will hold back on progress so others may go ahead. Cut advertising to the bone, drop most of your promotion and string along with old equipment and time-worn techniques. Don't gear appropriations to your volume of business or your potential. Just keep the whole ball of wax in your hands and keep it as low as possible.

Keep Inventories Low: This is a very good way to fix your customers. And it is a quick way to have them cross the street to another supplier. Keep your inventories low by proving to yourself that things are not as good as they seem; that customers won't want any more than they are getting now, and that it is unwise to tie up money in stocks. This way you make it easy for your competition to keep your customers happy; to take over your customers; and to gain new ones whom you ought to have.

Miscellaneous: Let letters go; duck telephone calls; hide from your customers, learn how to double talk and be evasive when situations call for clear cut answers.

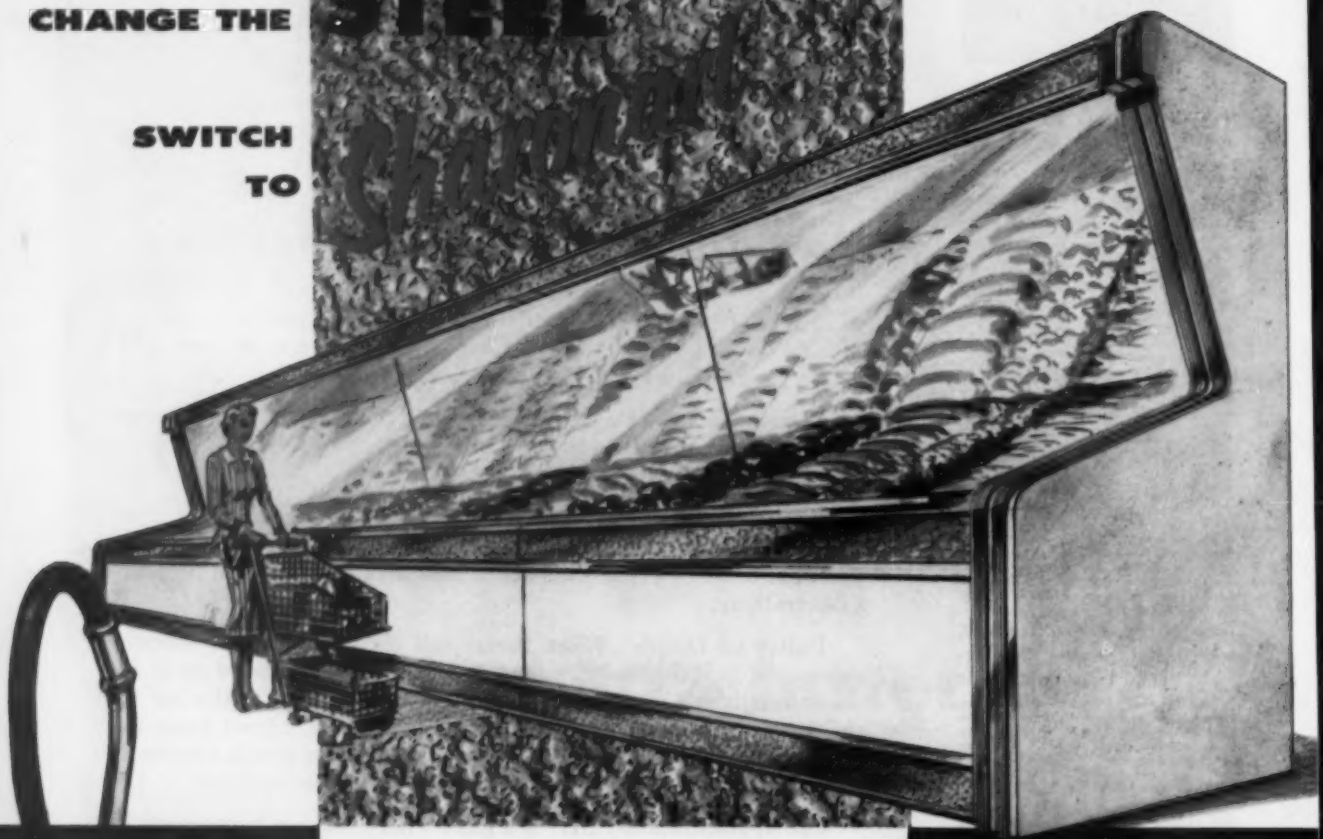
By doing all this you will help your competition.

Tom Campbell

EDITOR

TO CHANGE THE CHANGE THE SWITCH TO

Style STEEL Sharonart



SHARONSTEEL

Another quality of Sharonart—the rolled-in design steel—is its ability to resist marring. This makes it the ideal material for products that must withstand constant abuse—sweepers, display counters, business machines, metal furniture, cabinet and door hardware and so forth.

There are many other reasons why leading designers are finding more and more applications for Sharonart. What about your product? For complete information contact the Sharon office nearest you, or write direct for your copy of the new Sharonart booklet.

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Sharon, Pennsylvania

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Please send "SHARONART surface rolled patterns" in steel.

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Position.....

Company.....

City..... Zone..... State.....

dear editor: *letters from readers*

Silicon Transistors

Sir:

I read with great interest your writeup on "Silicon: New Uses Opening Up," p. 68 of the July 14 issue.

We have been interested in the pure silicon for the past 18 years. . . . Our investigations followed a different line than the one mentioned in your writeup and we would like to obtain as much information as possible regarding who is manufacturing the transistors made of this high purity silicon.

As far as we have been able to determine the deposit of silicon which we control has the highest purity of any on this continent and if we could contact the purchasers of this material we feel that the price could again be lowered due to the fact that there would be less refining required to bring our silicon up to the purity specifications required for the purposes mentioned in your article.

If you are allowed to give us further information on this subject we would be very pleased to receive it.

I would like to take this opportunity to say what a fine publication I find THE IRON AGE. It covers the field very carefully and keeps us right up to date on the latest news in this field. *F. B. Watson, President, Copper-Uranium Ltd., Dunham, Quebec, Canada.*

Current word from Bell Telephone Laboratories, Murray Hill, N. J. tells of a new silicon power rectifier which shows promise of reducing costs greatly in many industries using electric power.—Ed.

Metal Finishing

Sir:

Reference is made in the article "Metal Finishing: New Developments Shape Future Trends," July 14 issue, to an instrument known as the Solubridge. We would appreciate any information you may have concerning the name and address of the manufacturer of this instrument. *T. E. Murray, Service Engineer, Metal Working Dept., E. F. Houghton & Co., Philadelphia.*

The Solubridge is made by Industrial Instruments, Inc., 89 Commerce Road, Cedar Grove, N. J.—Ed.

Inspection

Sir:

In the *Buffalo Evening News* of July 12 I read an article stating that a New York company has developed an inspection instrument that can "see through" steel as thick as 7 in. It employs radioactive cobalt 60 in operation.

I would appreciate receiving any information you can give me about this company and its product so that I may contact them direct. *E. Schugar, Vice-President & General Manager, Buffalo Arms, Inc., Buffalo, N. Y.*

THE IRON AGE carried an article on this development in the May 26 issue, p. 117. The company referred to there was Babcock & Wilcox Co., 161 E. 42nd St., New York 17, N. Y.

"100 Years"

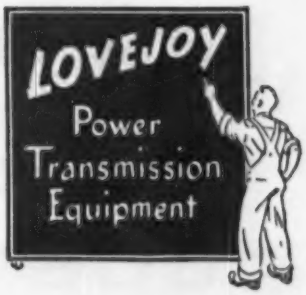
Sir:

This is one of the finest reports I have ever read and I certainly enjoyed going through it. Congratulations. *H. J. Kaiser, Jr., Henry J. Kaiser Co., Oakland, Calif.*

Sir:

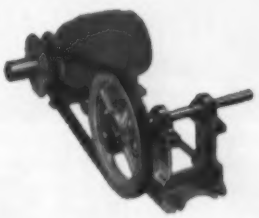
You are to be congratulated on the completeness and attractive manner in which this story is presented. You may be sure that this book is of great interest to me and its contents will be read very thoroughly. *G. E. Whitlock, Chairman of the Board, Mullins Mfg. Corp., Salem, Ohio.*

Many thanks. A limited number of single copies are still available at $2.00 each.—Ed.



• **Economical In Cost**
• **Easily Installed**
• **Maintenance-Free**

Flexible Couplings:
No lubrication required. Quickly installed. Easily replaced. Cushions are reversible—can be changed or reversed without shutdown. Fractional to over 2400 hp. Light, medium or heavy duty.



Variable Speed Pulleys:
Quickly installed on new or old equipment. Change speed while machine is running. Ratios to 3 to 1. Fractional to 15 hp.

Select-O-Speed Transmissions:
Economical as compared to other variable speed transmissions. Instant adjustment over wide range of speeds. Hand wheel or lever control. Ratios to 10 to 1. Fractional to 5 hp.

Universal Joints:
Precision ground. Finest alloy steel. No binding, backlash or end play. 13 sizes, fractional to 207 hp. Bores ¼ to 2 in. Lengths 2 to 10¾ in.

TYPES AND SIZES FOR ALL APPLICATIONS.
Get full information today. Request catalogs.

LOVEJOY FLEXIBLE COUPLING CO.
4866 W. Lake St., Chicago 44, Illinois

BAKER "FG" GAS TRUCKS COST LESS TO OWN

EIGHT REASONS WHY...

1 LOWER INITIAL COST
—FG-40 (4000 lb.) $4295. Other models at proportionate savings.

2 LONGER WARRANTY PERIOD
—Baker quality permits full 6 months' warranty.

3 HIGHER LIFT
—Mast design allows higher standard lift than ordinary trucks.

4 LOWER MAINTENANCE COSTS
—Designed for easier and less frequent servicing.

5 MORE MANEUVERABLE
—Short turning radius cuts aisle width, adds floor space.

6 EASIER TO OPERATE
—Greater visibility... easy-to-work controls.

7 GREATER STABILITY
—Lower center of gravity... higher "stability factor" ratio.

8 BETTER BRAKING
—Full floating, self-equalizing, self-energizing brakes.

Write for descriptive literature.

THE BAKER-RAULANG COMPANY
1227 WEST 80th STREET • CLEVELAND 2, OHIO

Baker
handling equipment

A Subsidiary of Otis Elevator Co.

637

fatigue cracks

by William M. Coffey

The Big Show

There's a big one coming up and I want you to send the money real quick so you won't miss it.

It's the mammoth, colossal, spectacular of spectaculars, the Machine Tool Show Issue, coming August 25th. If you don't renew before that time you'll be sorry. You'll be all cut up because you won't learn how automobile manufacturers select machine tools, (this prepared by the top engineering group of Chrysler Corp.) . . . or how an appliance manufacturer selects a machine tool. You'll miss write-ups and photos of products to be displayed at this, America's biggest show. We can't promise Marilyn North or Sheree Monroe, but, by gosh, you'll get some sound stuff on the benefits of a sound replacement policy for machine tools and some solid material on the role of capital goods in an expanding economy. AND a most important and significant survey of the domestic machine tool market. So send the money.

Caleb Flerk's Own Story (Part I)

Here begins a story which as far as we know will be the first serialized fiction ever printed in IRON AGE. *We will try to give you a chapter each week, with, of course, a synopsis of what happened the previous week.*

Dear mr MacArty:

Inclose i attach a pitcher of my arrplane in which you will note their has bin some trouble of an seRRious nature i am desirous to leave you hear about. This here particklar arrplane orichinally made by some plumbers of yourn was solt to me at a War Assets Administration sail in the town of Hockeyjock, Ark. lass month, a mister Morris Finestine was agent for the tramsackshun. This Finestine was passin through town at the time bying up all kind of cerplus equipment and he got wind they was a arrplane stashed away in the county. This here particklar job was flew in here back in awgust of 45 by a navy pilot and had set over to the field in North Hockeyjock ever since. The Navy feller was flyin enroot to Sandy Aigo the days the japps threw in their suits and quit and this feller here this over the raddio. Immediately when he hear this he set down at the nearest field which was ours and inside of an hour he was lying stiff in Jake Bragan's place, celebratin peace. From the time this navy feller land here i sort of had my eye on this here plane.

(Nezt week, Caleb goes asportin' in the arrplane, with george murch.)

Puzzlers

A perfectly straight road 45 miles long runs North-South. At each end of the road is a horse, and on the nose of the North horse there is a fly.

At the identical moment that the south horse sets off northwards at 12½ per hour, the north horse starts off southwards at 17½ miles per hour, and the fly starts southwards at 60 miles per hour until it reaches the nose of the northward horse, where it turns round and travels north until it reaches the nose of the southward horse.

It continues thus, traveling from nose to nose.

Question: Ignoring deceleration and acceleration at each turn round, how far has the fly traveled when the horses crash head on and the poor little devil gets squashed?

a significant advance

FOOTE

RIMEX

for producing

RIMMED STEEL

This industry-proved steel additive reduces the cost of producing rimmed steel, with these advantages:

FOOTE RIMEX*

1. Improves rimming action
2. Minimizes ingot growth
3. Fumes not obnoxious
4. Improves steel quality

Information and prices upon request.

*Registered Trade Mark

Foote MINERAL COMPANY

438 Eighteen W. Chelten Bldg.
Philadelphia 44, Pa.

"I'm never 'Small Fry'..."

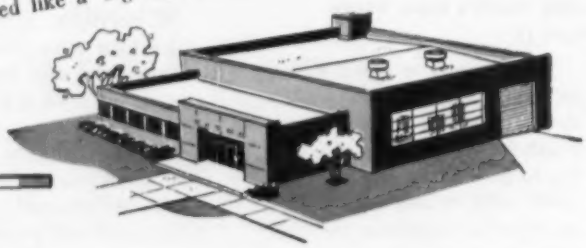
when I do business with Lamson & Sessions"

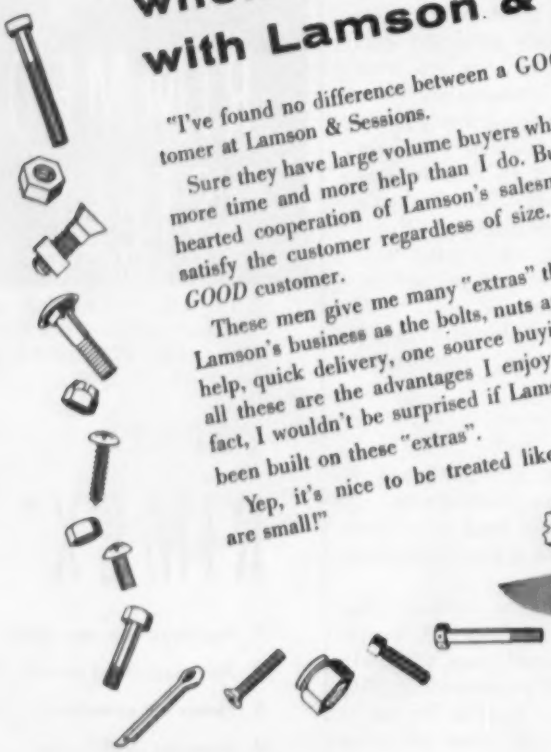
"I've found no difference between a GOOD customer and a BIG customer at Lamson & Sessions.

Sure they have large volume buyers who perhaps require more service, more time and more help than I do. But I, too, enjoy the same wholehearted cooperation of Lamson's salesmen whose only incentive is to satisfy the customer regardless of size. To them *EVERY* customer is a *GOOD* customer.

These men give me many "extras" that seem to be as much a part of Lamson's business as the bolts, nuts and screws themselves. Engineering help, quick delivery, one source buying, pleasant congenial people . . . all these are the advantages I enjoy when I do business with them. In fact, I wouldn't be surprised if Lamson's leadership in the industry has been built on these "extras".

Yep, it's nice to be treated like a "big shot" even when my orders are small!"





YOU GET MORE WHEN YOU BUY FROM . . .

Lamson & Sessions

The LAMSON & SESSIONS Co.

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dates to remember

AUGUST

AMERICAN SOCIETY OF TRAINING DIRECTORS — 2nd Annual Institute, August 7-20, Eagle Waters Resort, Eagle River, Wisconsin.

EXPOSITIONS

MACHINE TOOL SHOW—Presented by National Machine Tool Builders Assn., International Amphitheatre, Chicago, September 6-17, inclusive. This is the first industry-wide showing since 1947 of advances in machine tools.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS — Pacific General Meeting, August 15-19, Butte, Montana.

NATIONAL INDUSTRIAL CONFERENCE BOARD AND STANFORD RESEARCH INSTITUTE—National Symposium on current "Electronics and Automation Production," August 22-23, San Francisco.

WESTERN ELECTRONICS SHOW AND CONVENTION — August 24-26, Civic Auditorium, San Francisco.

NATIONAL ASSOCIATION OF FURNITURE MANUFACTURERS — August 28-September 1, Conrad Hilton Hotel, Chicago. Showing on new products and ideas.

GENERAL MOTORS — Powerama, August 31-September 25, South Lake Shore Drive, adjacent to Soldiers Field, Chicago.

SEPTEMBER

INTERNATIONAL BRIQUETTING ASSN.—Annual conference, September 1-3, Stanley Hotel, Estes Park, Colo. Association headquarters are at the University of Wyoming, Laramie.

AMERICAN MACHINE TOOL DISTRIBUTORS ASSN.—Annual meeting, Sept. 5-6, The Blackstone, Chicago. Association headquarters are at 1900 Arch St., Philadelphia.

INSTRUMENT SOCIETY OF AMERICA —Annual meeting, September 12-16, Shrine Auditorium, Los Angeles. Society headquarters are at 1319 Allegheny Avenue, Pittsburgh.

PACKAGING MACHINERY MANUFACTURERS INSTITUTE—Annual meeting, Sept. 15-18, The Homestead, Hot Springs, Va. Institute headquarters are at 342 Madison Avenue, New York.

SOCIETY OF INDUSTRIAL PACKAGING & MATERIALS HANDLING ENGINEERS — Annual meeting, September 19-22, Kings Armory, New York. Society headquarters are at 111 West Jackson Blvd., Chicago.

From the production line

is one of industry's advantages in NORTH CAROLINA

The good record of North Carolina labor's productivity and stability is at least partly explained by the many opportunities for pleasant living in this year 'round mild climate. In such surroundings, workers are naturally more contented, happier on the job.

Desirable industrial sites, some with buildings, are available in mountain, piedmont and coastal areas, both urban and rural locations. For a copy of the North Carolina brochure, just write Ben E. Douglas, Director, Department of Conservation and Development, Raleigh 11, N.C.

Friendly North Carolina Where Industry Prospers

AGAIN...LATHE LEADERSHIP

15 NEW Powerturn LATHES

NEW FEATURES FOR ADDED PRODUCTIVE CAPACITY AND GREATER OPERATING CONVENIENCE . . . WITH TRADITIONAL LODGE & SHIPLEY ACCURACY AND RUGGED STRENGTH

With apologies to so many loyal lathe users who've stoutly claimed Model X Lathes as the "greatest ever" here's a worthy successor to that famous series!

From headstock to tailstock . . . and down to the floor . . . POWERTURN Lathes are newly designed to facilitate turning to higher levels of profitable lathe operation. New features add importantly to Lodge & Shipley Lathes' ability to produce more at lower costs.

Start turning problems into profits . . . make your next lathe a Lodge & Shipley POWERTURN Lathe . . . newest and best! The Lodge & Shipley Co., 3055 Colerain Ave., Cincinnati 25, Ohio.

HEADSTOCK
. . . Computing head with time-saving speed selection, positive brake, built-in horsepower ammeter

CARRIAGE AND APRON
. . . greater swing over cross slide, micrometer indication of carriage movement, hardened and ground, steel cross slide ways

FEED AND THREAD GEARING
. . . new tilted index plate and levers for easy selection

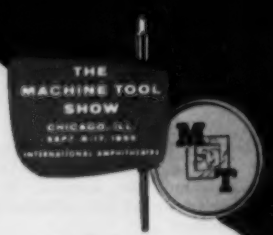
CROSS FEED AND TOP SLIDE DIALS
. . . large, direct reading in .001" diameter increments

COMPOUND REST
. . . square base rest reduces overhang, increases strength

BED AND BEDWAYS
. . . new chip and coolant pan, easy mounting of guards, removal of chips

TAILSTOCK
. . . spindle hardened and ground, front-mounted handwheel, tailstock quickly moved, positively locked

13", 16" and 20" Standard—Engine, Toolmaker, Gap, Manufacturing and COPYMATIC Types



new POWERTURN literature available now!

Bulletins:

#302—13" Engine Lathe
#303—16" Engine Lathe
#304—20" Standard Engine Lathe
#305—13" Toolmaker Lathe
#306—16" Toolmaker Lathe
#307—20" Standard Toolmaker Lathe

POWERTURN LATHES are available on Lodge & Shipley Lease and Deferred Payment Plans, details on request.

FROM LODGE & SHIPLEY!

Featuring the time-saving new

Computing HEAD

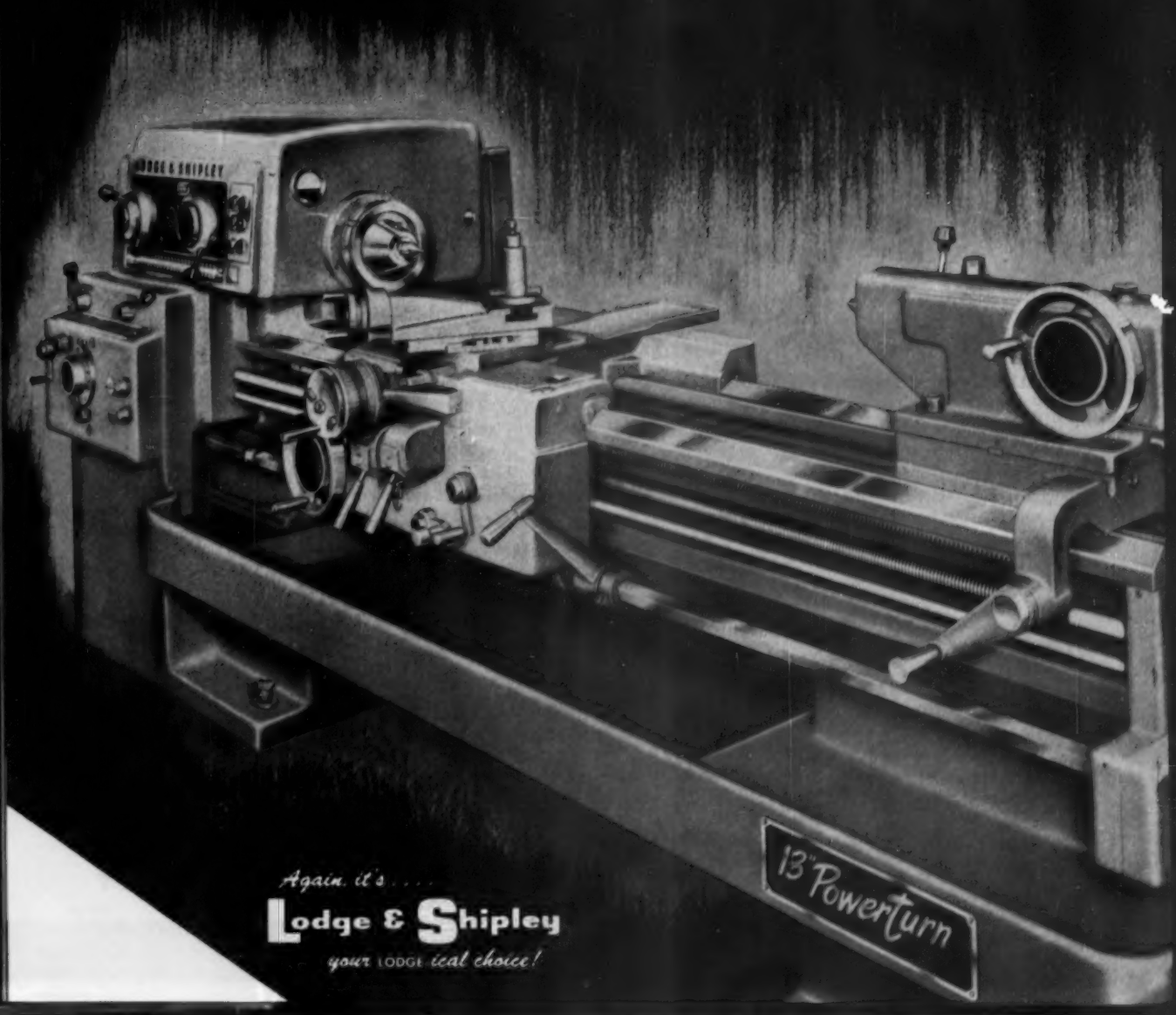
. . . fast, fool-proof indication of speed lever settings!

and, ***Centri-trol*** **CONTROLS**

. . . all controls conveniently grouped, distinctively shaped!

See it NOW... See it at The MACHINE TOOL SHOW!

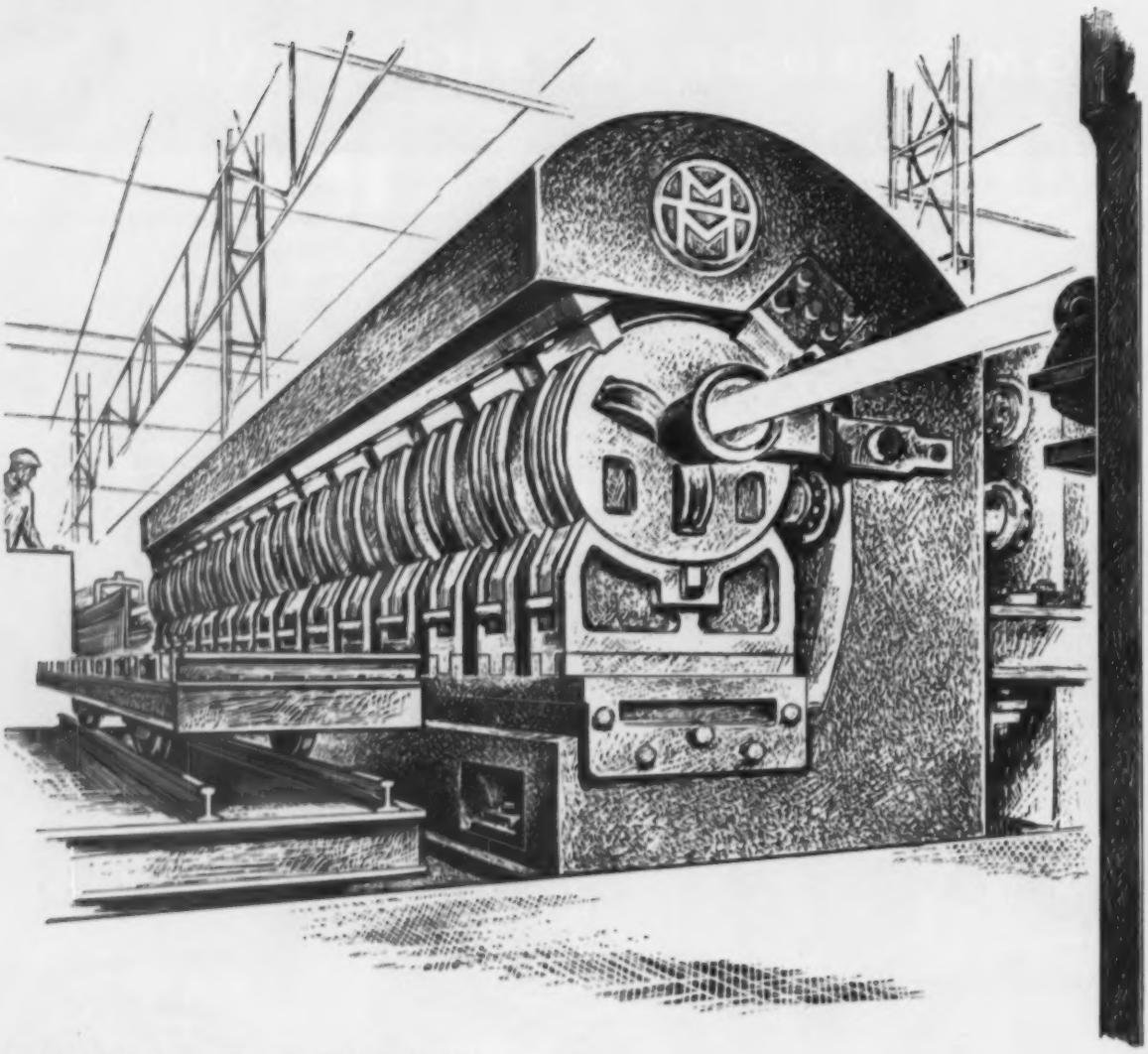
SEPTEMBER 6th-17th, BOOTH NO. 502



Again it's . . .

Lodge & Shipley

your LODGE *ical choice!*



Want Higher Pipe Production?

Stretch reducing to increase tonnage rating of existing pipe welding mills or to increase the potential output of new mills is one of the recent production improvements at Mannesmann-Meer. Welding or rolling large diameter standard sizes boosts tonnage of the original mill and puts the stretch mill to work to produce the smaller sizes.

But that's only half of the story. By applying the 3-roll arrangement to the stretch reducing mill, greater diameter and outstandingly high wall reductions together with an improved mill finished product have been made possible. Moreover, basic changes in overall mill design include a revolutionary new mill drive and an ingenious roll stand arrangement to suit today's need for extremely fast schedule changeover.

Plan ahead and develop today what you will ask for tomorrow is Mannesmann-Meer's approach to the problems of the pipe and tube industry. This leads to the design of equipment incorporating a combination of

- CREATIVE ENGINEERING
- DESIGN EXPERIENCE
- OPERATING BACKGROUND
- AMERICAN MANUFACTURING SKILL

which is nowhere else available and ready to answer your questions.

MANNESMANN-MEER

ENGINEERING AND CONSTRUCTION COMPANY, 900 LINE STREET, EASTON, PENNA

WORLD SPECIALISTS IN HIGH-SPEED TUBE MILL MACHINERY

Massive boom built of USS TRI-TEN Steel

helps to keep this giant shovel working around-the-clock all year 'round

This machine is moving an average of well over 1,200,000 cu. yds. of overburden a month at the Wright Mine of the Boonville Collieries Corporation, subsidiary of Ayrshire Collieries Corp. of Indianapolis, Ind.

To pay off on the more than a million-and-a-half dollars invested in this mammoth 45-cu. yd. power shovel it must operate *continuously*—24 hours a day, day after day, every month in the year.

That's why the engineers of the Marion Power Shovel Co., Marion, O., selected USS TRI-TEN Steel for all plates, angles and tees in the massive 120 ft. boom. For this tough, versatile steel not only has great strength—a 50% higher yield point than carbon steel—but in addition possesses an important advantage well proved in other similar construction . . . it has the unusual ability to withstand shock and stress at sub-zero temperatures. Here in short is a true *all-weather* steel.

In other words, when the thermometer drops to the point where a less efficient steel might tend to crack and fail in service, USS TRI-TEN construction can confidently be depended upon to keep the equipment profitably on the job.

Not only in booms like this, but in drag line buckets, heavy-duty truck frames, bull-dozers and power shovels that must be kept working hour after hour in any kind of climate, USS TRI-TEN Steel and its companion, USS TRI-TEN "E" Steel, have proved their superiority by minimizing breakdown hazards. In hundreds of heavy-duty applications, where dependability is of prime importance, the use of these high strength steels has resulted in the kind of uninterrupted operation that spells bigger output at lower cost.

NOW AVAILABLE . . . Our new "Design Manual for High Strength Steels" is ready for distribution. This 174-page book is free. It contains comprehensive and practical information that you will find extremely useful in designing your equipment for greater economy and efficiency by the sound use of high strength steels. For your copy, write on your company letterhead giving your title or department, to United States Steel Corporation, Room 4819, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS HIGH STRENGTH STEELS

USS

5-1834

USS TRI-TEN • USS COR-TEN • USS MAN-TEN

UNITED STATES STEEL

"My crew is as good as

you can find"

says Alex Janathan,

U. S. STEEL PRESSMAN

● If you were to visit the forge shop at our Homestead District Works, you'd want to see the 7,000-ton press at work. This isn't our biggest press, or our smallest, but it handles some of our most interesting jobs.

The entire crew—press driver, manipulator operator, craneman and helpers are under the direction of Alex Janathan who started in the open hearth when he was 16. If you talked to Alex, here's about the way the conversation might go:

YOU: *"What did you do after you left the open hearth?"*

JANATHAN: "When I left the open hearth, after 3 years, I was first man on the ladle. Then I went to the Heat Treating and Forge Department and worked on the alloy plate shears for 3 years."

YOU: *"And you've stayed in the forge department ever since?"*

JANATHAN: "Yes, at different jobs. After working the shears, I went burning for 3 years—cutting locomotive side frames out of slabs. It was a new idea to replace castings. While I was burning, I got turns as helper on the 3,000-ton press. I worked as press driver, then in '34 was made pressman."

YOU: *"So you've been a pressman now for about 21 years. Did you work on other presses, too?"*

JANATHAN: "I've worked every press we own."

YOU: *"Do you specialize on any one type of product?"*

JANATHAN: "No. I make turbine and generator shafts, every kind of alloy and stainless steel forgings. I also make water wheel shafts, U-plates, half-circles, as well as drop hammer bases and columns."

YOU: *"What's one of your biggest problems while you're forging these big jobs? What do you have to watch for?"*

JANATHAN: "Well, there's the problem of ingots that don't cool evenly while they're on the press."

YOU: *"What causes that?"*

JANATHAN: "When the ingot comes from the furnace, it's evenly heated all the way through, but it's covered with scale. While we work it, sometimes the scale gets knocked off on just one side; so that side cools faster than the side that's insulated with scale. When we forge a piece like that, the hot, or scale side flows outward faster than the cool side, and the piece will not forge accurately."

YOU: *"What do you do then?"*

JANATHAN: "First, we try to remove scale evenly from the ingot. But if it still cools unevenly, we spray the hot side with water until the temperature is even all around. Then the ingot flows the same on all sides. Even ingot heat is awfully important. . . . If it cools too much, the corners start to tear, especially when you're forging alloy and stainless steels. These things are important because we work to such close tolerances. Take a 55″ ingot. When we forge a die block bloom from that ingot we reduce it to 37″ x 21″ and only have ¼″ tolerance."

YOU: *"As far as you're concerned, what's the most important factor in making good forgings?"*

JANATHAN: "First, you have to have good steel. We make our own so that's never a problem. Then you have to have good equipment. We've got the best. But most important is the crew. Mine for example. Turnover is small. Every man knows his job and has been on it for years. I've visited a lot of forge shops, but my crew is as good as you can find."

• • •

When you buy forgings from United States Steel, men like Alex Janathan and his crew work on them. We'll match their skill against the best in the land. For more information on USS Quality Forgings, write to United States Steel, 525 William Penn Place, Room 4819, Pittsburgh 30, Pa.

USS *Quality* FORGINGS

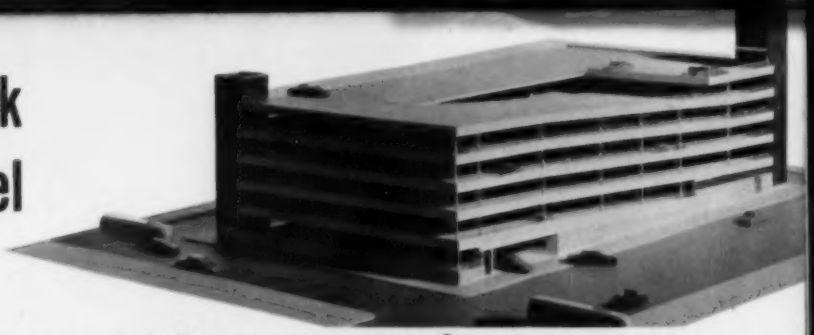
heavy machinery parts—carbon, alloy, stainless

electrical and water wheel shafts

hammer bases and columns

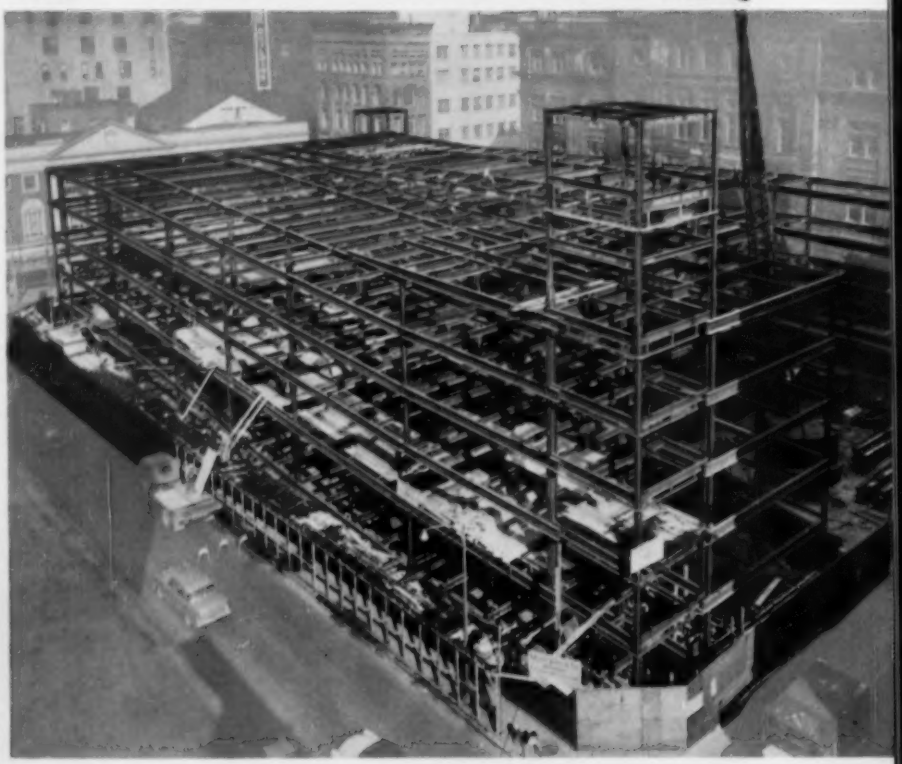
marine forgings

700 Tons of Steelwork for this unique 6-level rampless garage....



ERECTED IN JUST 5 WEEKS!

Allies Parking Garage
Public Parking Authority of Pittsburgh, Pa.
Planning Consultant:
Ramp Buildings Corporation
General Contractor:
Ragnar Benson, Inc.
Designed by:
Hoffman and Crumpton, A.I.A.
Leland W. Cook, Structural Engineer
Structural Steelwork by:
AMERICAN BRIDGE
Building is 6 levels, 120' wide x 220' long.
Erection of steelwork began Feb. 4, 1955, completed March 11, 1955.



Using high tensile bolts for field connections, AMERICAN BRIDGE makes quiet, speedy work of large mid-town structure

The Parking Authority of the City of Pittsburgh is answering the demand for new and better parking facilities by building one of the most unusual structures of its type to be found anywhere.

And by using steel-frame construction *field connected with high strength bolts*, the job is being handled so speedily and so quietly that folks on the street and in neighboring buildings are scarcely aware that a big new building is being constructed in their midst.

Erection started February 4, 1955 and was completed March 11, 1955 – an elapsed time of just 5 weeks!

Located on the corner of the broad Boulevard of the Allies and busy Smithfield Street in the heart of the Golden Triangle, the new garage is 120' wide x 220' long with six levels for drive-in parking. *The slightly tilted floors do away entirely with ordinary ramps.* It is designed with a center section 120' x 125' on slope and two level end sections 120' x 47'6". All connections were made with high tensile bolts. The 700 tons of structural steel framework was fabricated and erected by American Bridge.

The fast, uninterrupted and unusually quiet erection of this modern parking garage provides another strong argument in favor of steel-frame construction and *bolted field connections* for buildings of any type and size. For American Bridge crewmen can make tight connections with high-strength bolts as efficiently and speedily as less skilled personnel can handle the more common methods.

For detailed information regarding your requirements, please contact the office nearest you. Our engineers welcome an opportunity to confer with you.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE · ATLANTA · BALTIMORE · BIRMINGHAM · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DALLAS · DENVER · DETROIT · ELMIRA · GARY MEMPHIS · MINNEAPOLIS · NEW YORK · PHILADELPHIA · PITTSBURGH · PORTLAND, ORE. · ROANOKE · ST. LOUIS · SAN FRANCISCO · TRENTON UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS

UNITED STATES STEEL

Put life insurance on your forging dies!

The most critical period in the life of a forging die is its first few hours of use. Longer life is assured if adequate and proper lubrication is available during the break-in period.

Treat your dies with 'Aquadag'®—'dag' Colloidal Graphite in water—*before* they are used. This forms a microscopically thin and smooth film which assures necessary lubrication and reduces the need for operational lubricants. Also, it protects the surface against corrosion during storage prior to use. One forging plant increased die life 90% merely by pretreating its steel forging dies with 'Aquadag'.

Superior forging lubricants, either water-base or oil-base, can be prepared by adding a dispersion of 'dag' Colloidal Graphite to conventional die lubricants. 'dag' dispersions provide better parting, improved lubricity, and greater heat resistance; they also reduce lubricant costs, scrap losses, and die failure.

Write today for Acheson's free literature on forging lubricants. Ask for Bulletin No. 426-S2.

Dispersions of molybdenum disulfide are available in various carriers. We are also equipped to do custom dispersing of solids in a wide variety of carriers.

ACHESON COLLOIDS COMPANY
PORT HURON, MICHIGAN
...also ACHESON COLLOIDS LIMITED, LONDON, ENGLAND

use 'dag' dry films for trouble-free lubrication

At the Show...

See Stainless Bored at Better than 7" per Minute!

on the New LeBlond-Carlstedt Rapid Borer

With the new LeBlond-Carlstedt Rapid Borer, you can bore, trepan or counterbore holes *3 to 8 times faster than by the conventional D-bit method!* We'll prove this at the Machine Tool Show. You'll see a 1⅛" hole bored in solid Stainless 303 at better than 7" per minute. We'll bore 4140, C-1141 and 6150 even faster!

The Rapid Borer was developed expressly to accommodate revolutionary new tooling which cuts at very high speed with excellent accuracy and finish. Cutting oil is forced between the boring bar and hole wall forming a continuous bearing. It flushes back through a hole in the boring head and bar, carrying away the chips as it goes. Chip form is controlled both by tool angles and proper feed and speed combinations; thus tool faces are kept clean and chip passage clear. Cutter design produces balanced cutting pressures thereby controlling concentricity.

This new tooling requires a machine with the following characteristics, all of which are incorporated in the Rapid Borer's design:

High spindle horsepower

Ample rigidity throughout

Complete absence of vibration at all speeds

Infinitely-variable feeds (up to 38" per minute), independent of speeds, while running under load

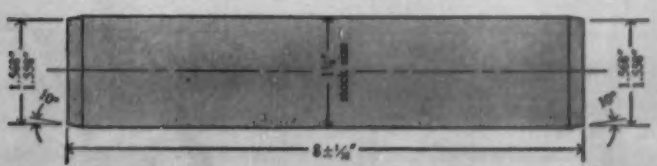
Final drive to spindle through belts

Large volume of cutting oil

Basically, the Rapid Borer is suited to work that is symmetrical for balance in rotation —round, square, octagonal, tapered or stepped. A wide variety of hole diameters and depths as well as work sizes can be accommodated.

Tell us about the holes you'd like to produce faster. Large holes or small. If the Rapid Borer can handle the job, we'll show you how to produce them faster than ever before.

Like to see your own materials bored at the show?



Just prepare sample bars of the materials you are now boring, or intend to bore. Make them according to the drawing here. Bring them to the Show and we'll bore them for you on the Rapid Borer.

See it at the show. No. 1313 — dead center of the new exhibition hall.

...cut with confidence

The R.K.LeBlond Machine Tool Company

Cincinnati 8, Ohio

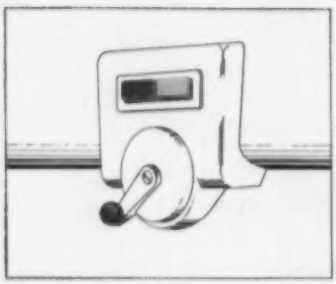
World's largest builder of a complete line of lathes for more than 68 years

LeBLOND of Cincinnati

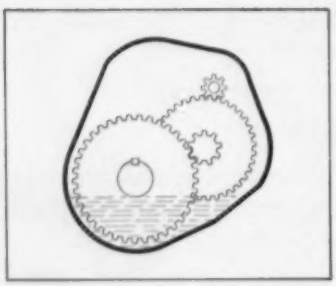
2 New CINCINNATI PRESS BRAKES

THIRTY TON - - - - - 2-30 SERIES
FIFTY TON - - - - - 3-50 SERIES

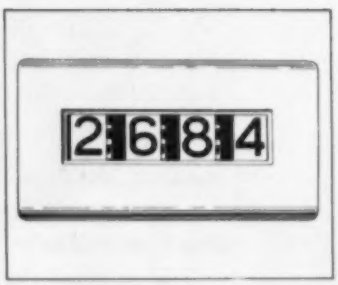
COMPETITIVELY PRICED



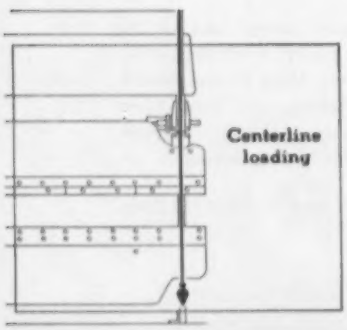
Front controlled, variable speed drive, 20 to 80 strokes per minute.



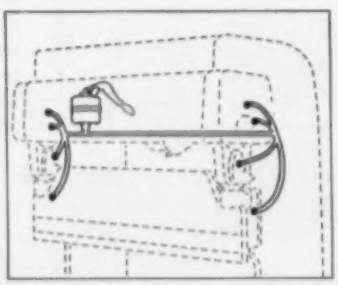
Completely enclosed transmission, running in oil.



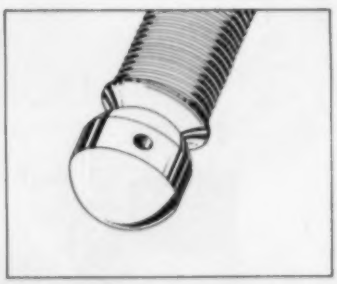
Two micrometer indicators, one at each end of the ram—easy to read and accurately record the amount of adjustment and tilt.



Centerline loading prevents weaving of the housings and insures accurate bends.



Centralized pressure lubrication system.



Ball end on the ram adjusting screws permits tapering of the ram for fade-out work.

CINCINNATI

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

2-30 SERIES

This new 2-30 Series Cincinnati All Steel Press Brake has a capacity of 14 gauge x 6′ mild steel.

Look at these unusual standard features:

2½″ stroke—12″ shut height—9″ throat.

Distance between housings 5′-2″—overall die surface, 6′-0″.

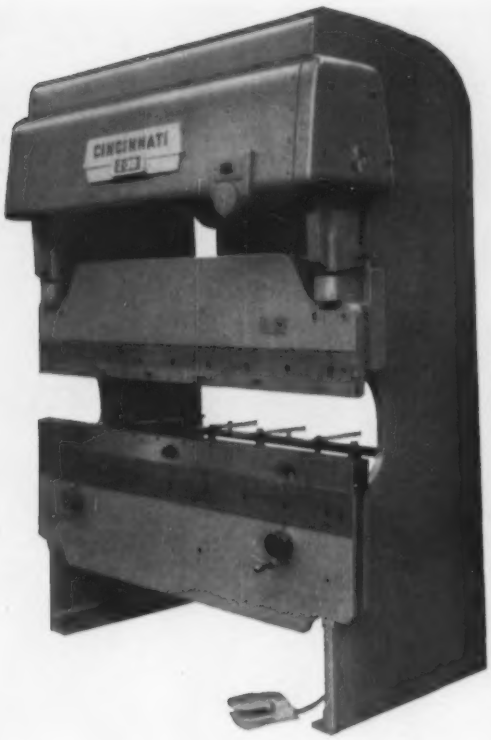
Front controlled, variable speed drive, 20 to 50 SPM. 4″ manual ram adjustment including ram tapering adjustment for fade-out work (power adjustment available as extra feature).

Bronze swivel end-guide bearing for accurate endwise alignment, even when tilting ram.

Brushless electro-magnetic brake and clutch.

Deep bed and ram, planed and drilled for 5¾″ angles.

Micrometer indicators on both ends of ram for fast, accurate setting.



3-50 SERIES

These new 3-50 Series Cincinnati All Steel Press Brakes are built in two lengths and have a capacity of 10 gauge x 6′ mild steel. Investigate these unusual standard features: 3″ stroke—12″ shut height—12″ throat—distance between housings 6′-6″ or 10′-6″—overall die surface 8′-0″ or 12′-0″—front controlled, variable speed drive, 20 to 50 SPM.

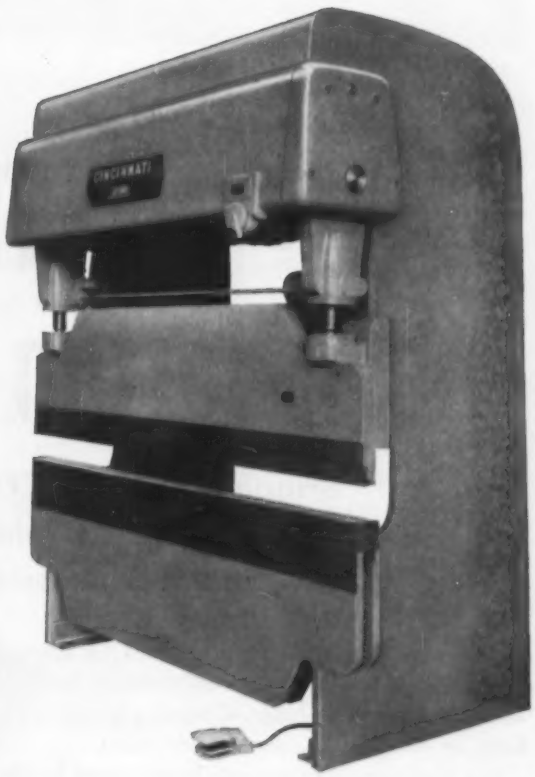
5″ motorized ram adjustment, including ram motor and control, complete with ram tapering adjustment for fade-out work.

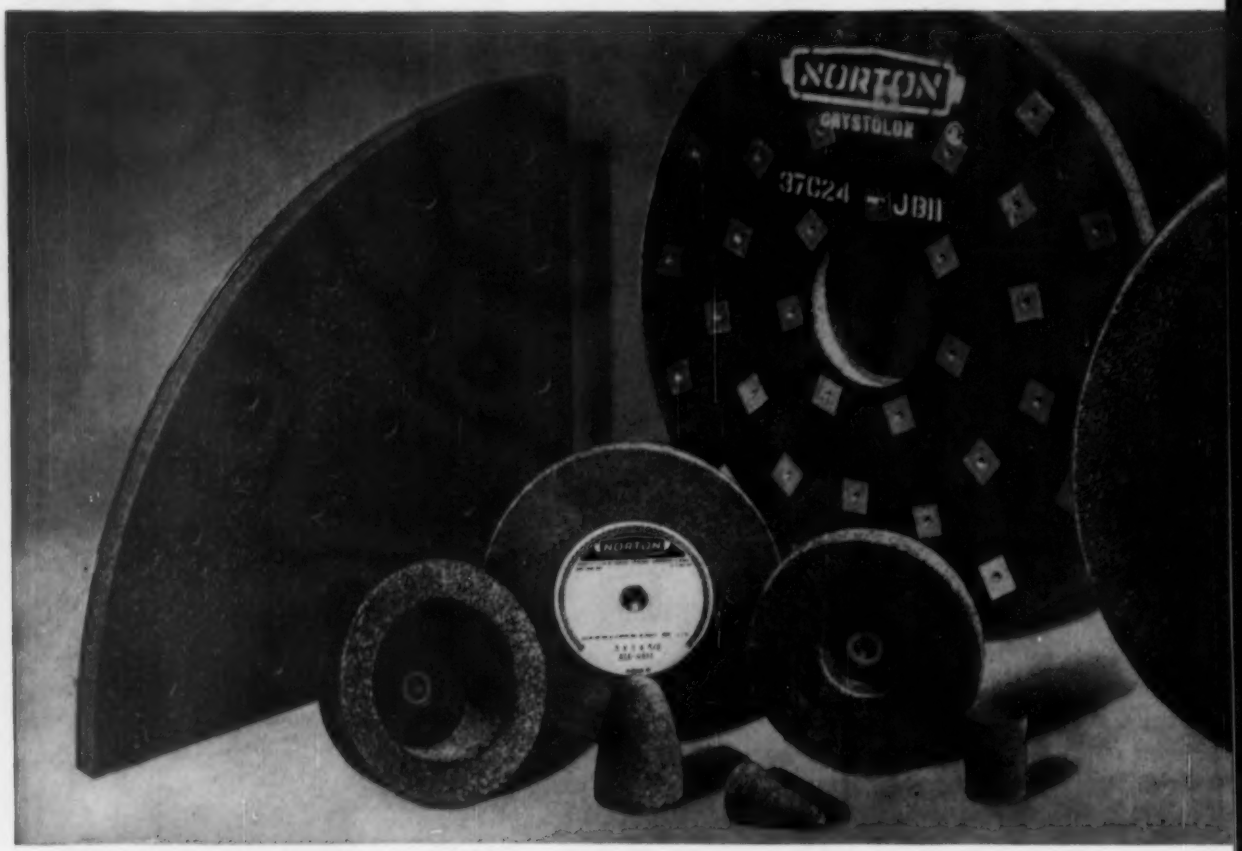
Bronze swivel end-guide bearing for accurate endwise alignment, even when tilting ram.

Brushless electro-magnetic brake and clutch.

Deep bed and ram, planed and drilled for 5¾″ angles.

Micrometer indicators on both ends of ram for fast, accurate setting.





Announcing:

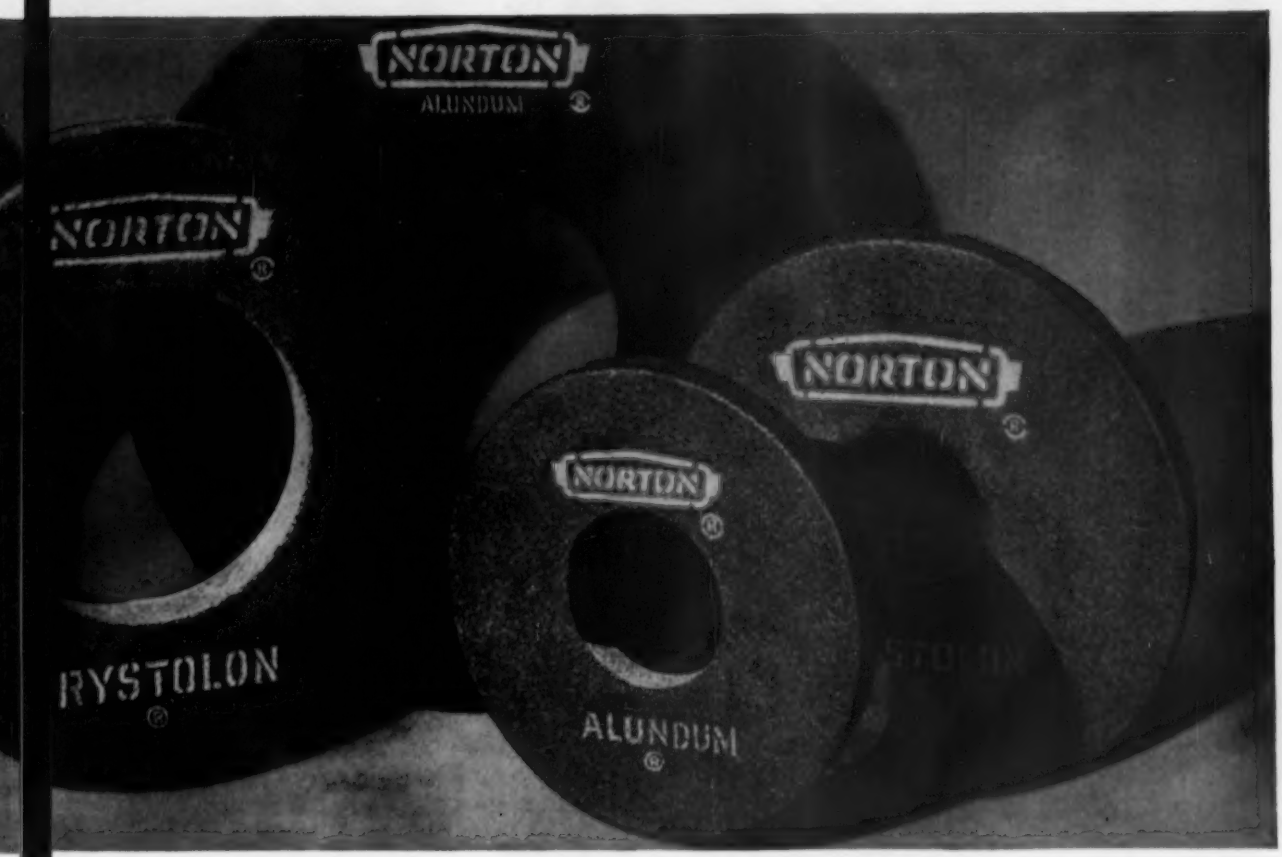
The B·11 – a great new Norton resinoid bond

Bringing new "TOUCH of GOLD" advantages to your snagging, B11 wheels are more uniform, better balanced, easier to choose and to use

Joining the list of famous Norton bonds that have made grinding wheel history, the new B11 resinoid offers unique advantages to a wide range of rough grinding applications, on all types of machines. Here's why:

New processing developments have resulted in wheels of extremely uniform structure bringing new standards of balance. As a result, B11 wheels "hug that work" closer, grind cooler and faster, with far less vibration and bounce. This more efficient grinding action means less operator-fatigue and longer wheel life.

In addition, you get closest possible duplication with B11 wheels. Hardness increments are evenly spaced throughout the entire grade scale. Since the one B11 bond includes a wide range of hardness grades, you no longer need to make the grade conversions required when changing from one resinoid bond type to another. And to make



it even easier for you to choose exactly the right wheel for every job, B11 wheels are available in half-grade increments. For example, where grade J is too soft and grade K too hard, you can specify grade J+ — which is exactly half-way between J and K.

How the "Touch of Gold" brings out hidden profits

B11 wheels are typical examples of how "Touch of Gold" performance is built into every Norton grinding wheel. In your own plant, they mean more value added to your products, more metal ground off per dollar, more time and money saved — important benefits that bring out the *hidden profits* in countless grinding jobs. And remember: only Norton brings you such long experience in both grinding wheels and machines to help you produce more at lower cost.

Your Norton Distributor

will gladly arrange test runs of the new B11 resinoid bonded wheels in your own shop. Or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all industrial areas, listed under "Grinding Wheels" in your phone book, yellow pages. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass. W-1664

NORTON

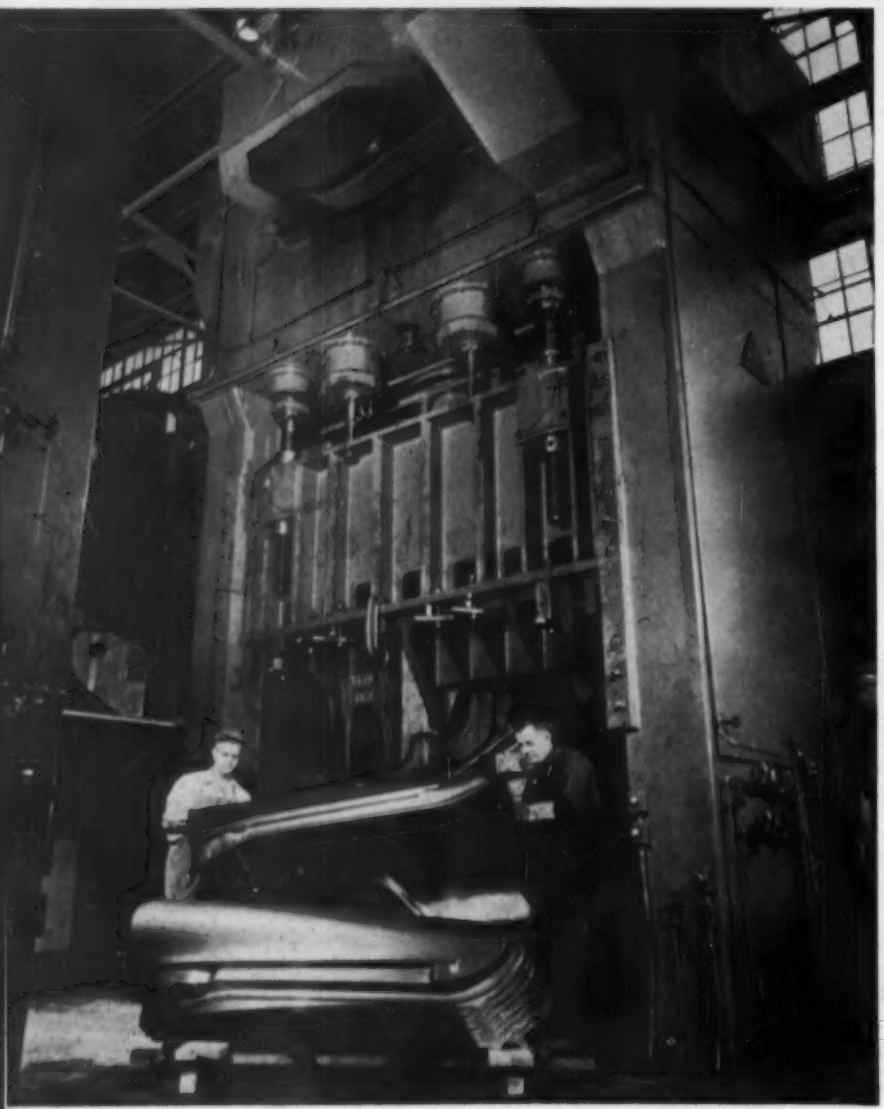
Making better products... to make your products better

and its BEHR-MANNING division

NORTON COMPANY: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING DIVISION: Coated Abrasives • Sharpening Stones • Pressure Sensitive Tapes

Sheet Steel is fed into a blanking press and sheared to fender outline.

Smoothly Contoured door panels, each shaped from a sheet of steel, move steadily on conveyors.



Eight-a-Minute—Steel sheets are deep drawn to fender contours in this huge, 450-ton double acting ram press where the cold steel flows evenly under tremendous pressure.

Shapeliness

The New Gives

When you look at the low, smooth-flowing lines of today's automobiles and admire their graceful styling, do you ever wonder how steel becomes so shapely?

The appeal of an automobile's design is far more than just the dream of a designer worked out from the artistic sketches and mock-up models he creates. It is the translation of his clay models by engineers and production men into practical contoured curves of steel sheet.

In the early days, the designer was limited by what steel could do and restricted by his own production equipment.

Today, automation has improved and speeded production. The techniques for making steel have advanced apace. Automakers can draw on the resources of technical know-how and steelmaking facilities equipped with the latest in technological controls, such as the new rolling mills at Pittsburgh Steel Company, for producing hot and cold rolled steel sheet.

So today the designer's range of ideas is becoming increasingly unlimited because better production and new quality in steel are giving

(Advertisement)

Complex Automatic equipment assembles inner and outer door panel where automation speeds production.

Assembled Doors, solidly constructed, yet gracefully styled, are ground and polished for perfect surface.

Fashion In Steel Quality Designers Vast Horizons

In the Showroom and on the road, designer's creation becomes a beautifully practical reality of steel shapeliness.

him ever-widening horizons for the creation of practical new designs. At Pittsburgh Steel this new quality in steel is called shapeliness.

• **What Is It?**—Shapeliness is the ability of steel to be drawn under tremendous pressure to the severest contours of design, while retaining its strength and giving a consistently smooth surface. Beyond that, it must maintain this quality uniformly in sheet after sheet and coil after coil to provide smooth, trouble-free performance on high-speed production lines.

You will quickly grasp the importance of this quality if you will take a look at today's production of sleekly-designed fenders and doors for beautiful new automobile styles.

The sheet from Pittsburgh Steel to provide these shapes has the necessary internal qualities: exact chemical analysis, cleanliness, and fine grain size. And it has the most desired external qualities: uniform dimensional accuracy and surface cleanliness.

It must have these qualifications throughout each sheet and from sheet to sheet as it is fed into powerful, high-speed press operations in order to minimize the possibility of grainy surface, buckles, wrinkles, tears, stretcher strains, or skin breaks.

It is shapeliness, then, that assures a snug-fitting door or fender with a clean, smooth surface for painting . . . one that is attractive on the showroom floor and a stand-out on the road.

• **How It Pays**—Not every steelmaker can produce this quality of shapeliness in steel with the same success. Some, by reason of new equipment and technical experience, can meet the manufacturers' requirements more consistently than others.

If the production of your products requires better than average quality sheet steel, why not explore the opportunities Pittsburgh Steel offers you? Your orders will get personal attention from the time they are entered on the books until your product is completed. A phone call today to the district office nearest you may prove worthwhile.

"Everything New But The Name"

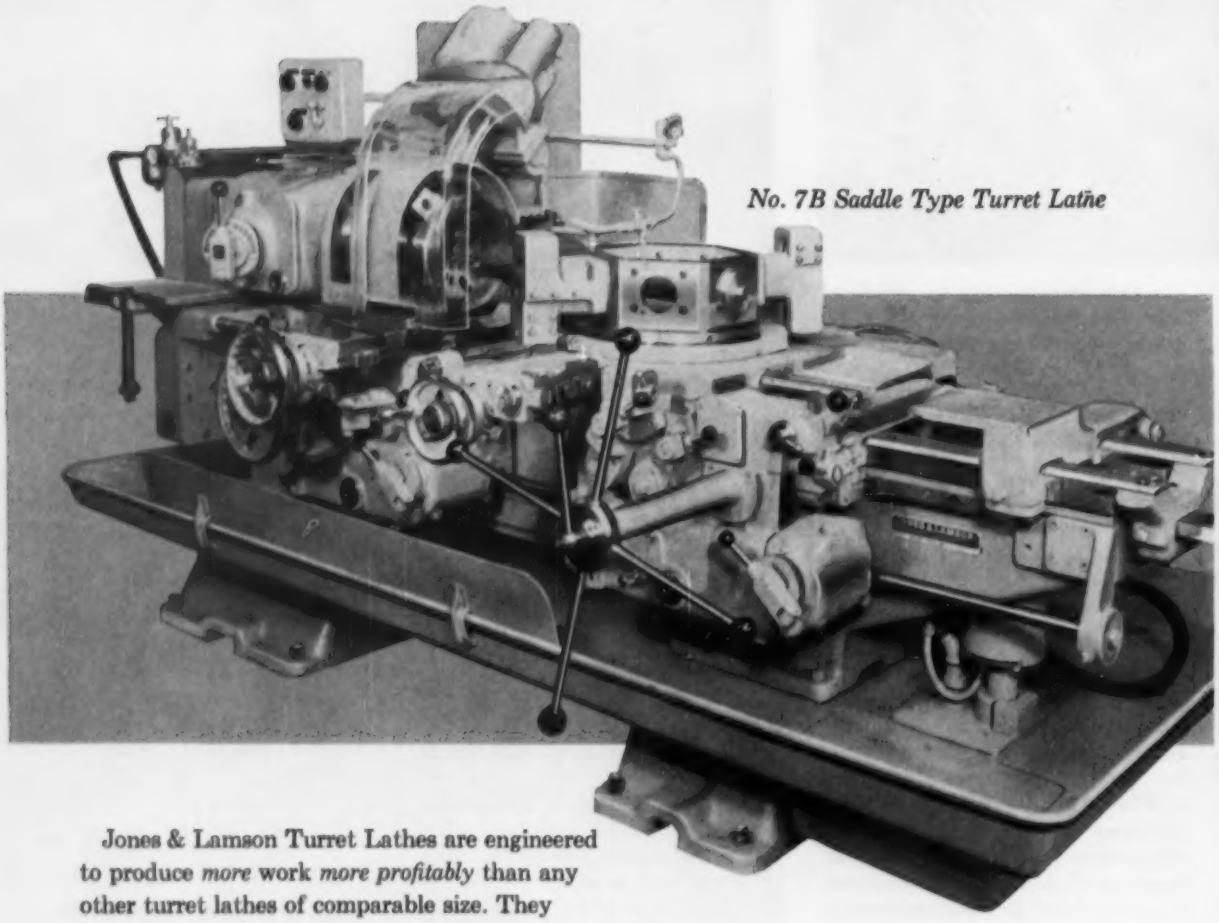
Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

DISTRICT SALES OFFICES: Atlanta • Chicago • Cleveland • Columbus • Dallas Dayton • Detroit • Houston • Los Angeles • New York • Philadelphia • Pittsburgh San Francisco • Tulsa • Warren, Ohio. **PLANTS:** Monessen, Pa. • Allenport, Pa. Akron • Los Angeles • Unionville, Conn. • Warren, Ohio • Worcester, Mass.

(Advertisement)

Engineered for Precision... Powered for Production...



No. 7B Saddle Type Turret Lathe

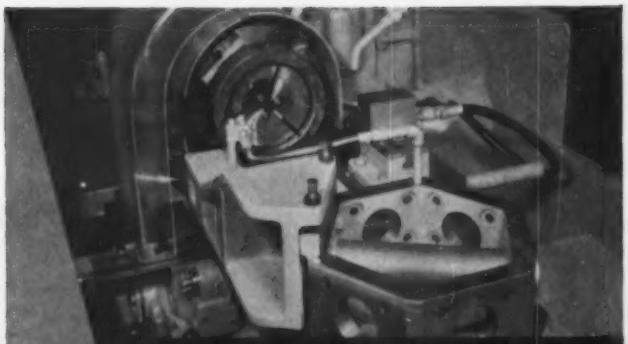
Jones & Lamson Turret Lathes are engineered to produce *more* work *more profitably* than any other turret lathes of comparable size. They have the rugged, rigid construction that makes possible greater accuracy and the use of Hi-Velocity turning; and they incorporate many superior features that assure PRODUCTIVE CAPACITY unmatched in its class. Adequate spindle speeds and horsepower insure the proper use of carbide cutting tools at surface speeds of 650-750 feet per minute.

J&L JONES & LAMSON MACHINE COMPANY

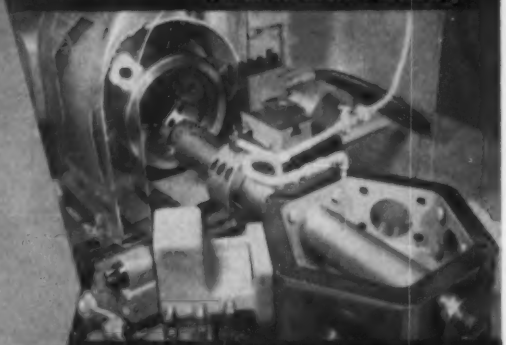
Jones & Lamson offers you a choice of methods for acquiring modern, profit-producing J & L equipment. In addition to outright purchase, J & L makes available several different "Pay-From-Productivity" plans at interest rates of 3¼% and lower (add-on), and a broad variety of lease plans.

Send today for complete details on J & L's machines, methods and Procurement Plans. Simply fill in the coupon, clip it to your letterhead and mail.

and capable of doing jobs like this...



First Operation: One tool mounted on the Hex Turret turns the O.D. while a tool mounted on the rear of the cross slide faces one end. At the end of the facing cut, the radius on the O.D. is formed.
Floor-to-floor, 1.94 min.



Second Operation: Location is taken from the two previous finished surfaces. Boring and I.D. chamfering are performed by using tools mounted on the Hex Turret while facing and forming of the O.D. are finished by tools mounted on the rear of the cross slide.
Floor-to-floor, 2.57 min.

Third Operation: Special wrap-around jaws mounted on a power operated three-jaw scroll chuck are used for holding the finish turned ring when grooving. The groove is formed by a radius tool held in a bar mounted on the Hex Turret (this applies to internal or external straight or taper races). I.D. is also chamfered in this operation.
Floor-to-floor, 1.67 min.

Machine tools do not pay dividends unless they are cutting metal. Engineering the tooling around the parts to be produced reduces the setup time to a minimum, and in many cases doubles the production per labor hour.

In this case high production methods of tooling for automatic lathes were simplified and applied to three 7B J&L Universal Saddle Type Turret Lathes. Inner and Outer Ball Bearing Races and Roller Bearing Races are produced on the same machines. Setup time from one lot to the next does not exceed fifteen to twenty minutes per machine.

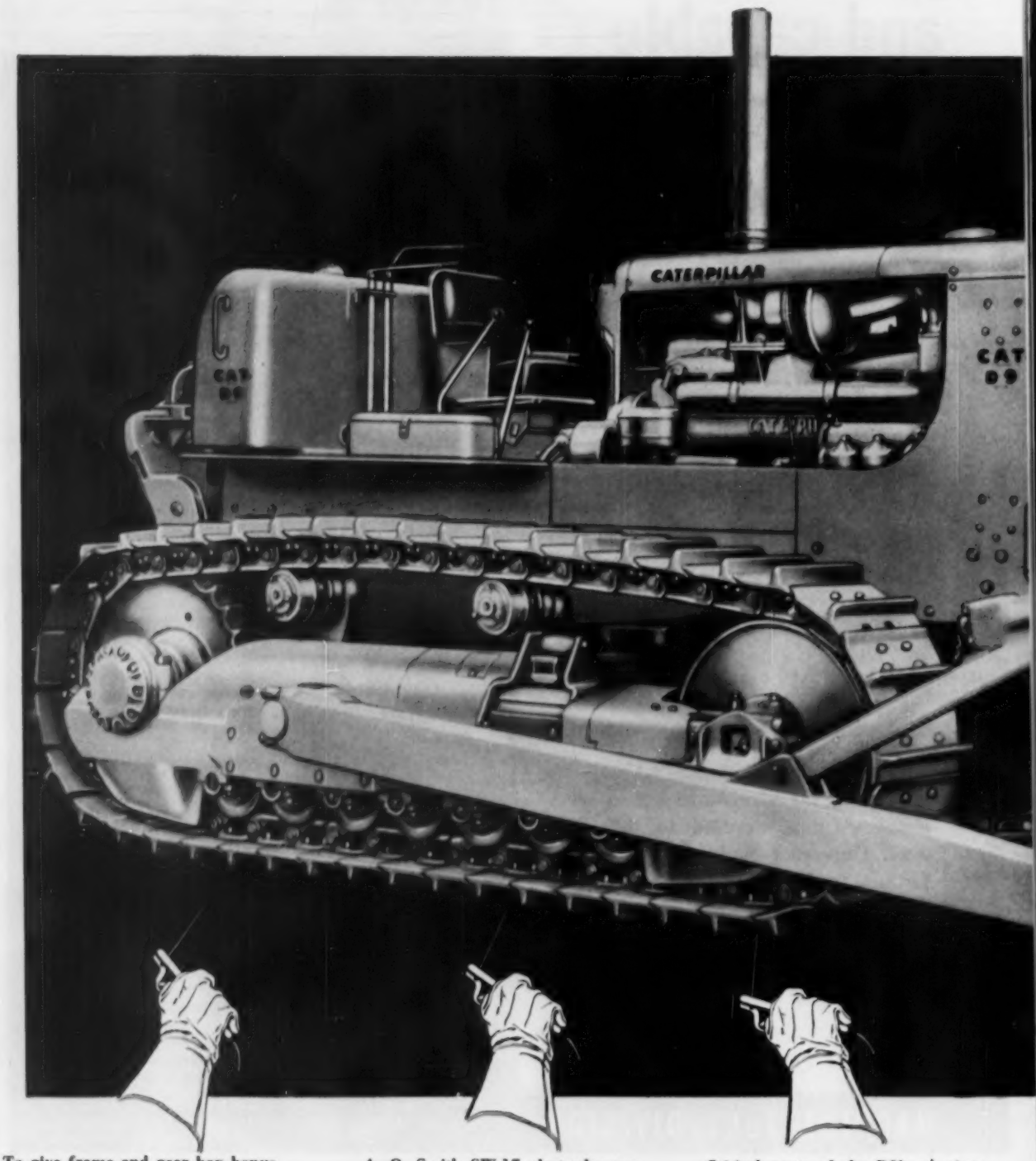
MACHINE TOOL DIVISION

UNIVERSAL TURRET LATHES • FAY AUTOMATIC LATHES • AUTOMATIC DOUBLE-END MILLING & CENTERING MACHINES • AUTOMATIC THREAD & FORM GRINDERS • OPTICAL COMPARATORS AUTOMATIC OPENING THREADING DIES & CHASERS

511 Clinton St., Dept. 710, Springfield, Vt., U.S.A.

Jones & Lamson Machine Company
511 Clinton St., Dept. 710, Springfield, Vt., U.S.A.
Please send me the J & L Machine Tool Replacement Information Kit.
Name _____
Title _____

A. O. Smith welding



To give frame and gear box bonus strength—guts to withstand extreme punishment—Caterpillar welds with A. O. Smith's SW-35 electrodes. SW-35 (E-6020) electrodes produce 45° fillets without undercut, are ideal for downhand welding, too.

A. O. Smith SW-17 electrodes are used to complete the mighty D9's frame. These AWS Class E-6012 electrodes lend themselves to heavy production welding... possess greater built-in toughness than other electrodes in their class.

Critical parts of the D9's steering clutch case are welded with A. O. Smith SW-15 electrodes. High heat and high speed combine with standout performance in all positions to make these the finest universal electrodes in AWS Class E-6013.

electrodes help build world's biggest crawler tractor

CATERPILLAR D9 TRACTOR

Built for brutal service . . . this the mightiest of all crawler tractors delivers 230 turbo-charged horsepower at the drawbar.

Reliable performance on the world's toughest projects results from Caterpillar's engineering and manufacturing skill . . . unfailing insistence on quality. The company is famous for using only the finest materials and components. For years, they have been among the largest users of A. O. Smith electrodes.

NOTE! *A. O. Smith supplies three kinds of welding electrodes for use in the manufacture of the world's biggest crawler tractor — the D9. These electrodes are favorites with the welding operators who work on the D9 line. Of course, all three electrodes were selected after thorough testing . . . after they had proved their ability to produce Caterpillar-quality welds all the time.*

If welding quality is on your mind, too, it will pay you to investigate A. O. Smith electrodes. See the representative who calls on you . . . or write A. O. Smith Corporation, Welding Products Division, Milwaukee 1, Wis.

The man from A. O. Smith . . .

Erv Steidl is the representative who helped Caterpillar select the right A. O. Smith electrodes for use on the D9. Not just a salesman — but a trained welding consultant — the man from A. O. Smith will be glad to help you with your welding problems.

PRODUCED BY WELDERS FOR WELDERS

Because welding is our full-time business, we offer you America's top line of welder-proved electrodes, machines and accessories.

Through research ***. . . a better way***

A.O.Smith

CORPORATION

WELDING PRODUCTS DIVISION
Milwaukee 1, Wisconsin

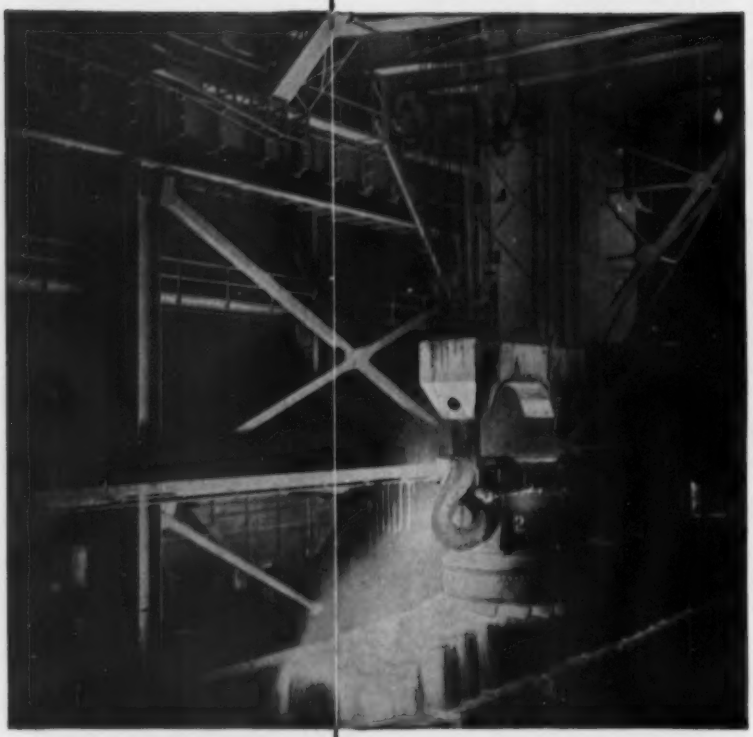
INTERNATIONAL DIVISION: MILWAUKEE 1, WIS.

Morgan cranes stop "on a dime"

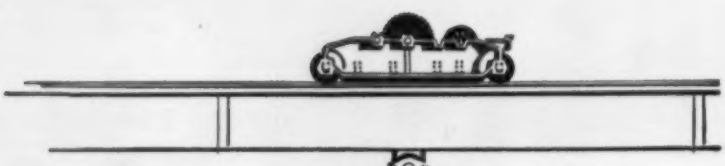
● BRAKING a Morgan crane under full load is as easy as stopping the family car.

Morgan hydraulic crane brakes provide maximum safety and pin-point accuracy in spotting heavy loads . . . another vital link in the chain of features that makes Morgan cranes best in the business.

Performance records prove that advanced design and heavy-duty construction of Morgan cranes make them less costly to operate and maintain. Let our representative show you how to save the most by buying the best . . . Morgan!



Positive action encourages operators to use the hydraulic brake rather than plug the motor.



The Morgan Engineering Company manufactures overhead electric traveling cranes, gantry cranes, charging machines, plate mills, blooming mills, structural mills, shears and saws.

THE
MORGAN
ENGINEERING CO. *Alliance, Ohio*

SSW forged rings take rugged, heavy wear of Heyl & Patterson coal breakers

SSW forged rings consistently have proven to Heyl & Patterson, Inc., Pittsburgh, they can take the rugged, heavy wear of their coal breakers. They've found Standard Steel's inherent uniform structure and high-quality analysis makes for longer-lasting, failure-proof life of these rings.

This 19-ft. long, 35-ton coal breaker revolves on two 13-ft. diameter endless forged steel tires. It's capable of producing approximately 600 tons of coal per hour, turning at 15 rpm. And Heyl & Patterson can count on these precision-treated rings to withstand effectively abrasion and wear of such heavy-duty operation.

In addition the structural uniformity of these rings enables them to simplify greatly fabrication of their breakers.

You too can improve your product, increase production with Standard Steel forgings. We have a new folder on forged weldless rings and flanges which tells you how. Act today by using the coupon conveniently located below.

BALDWIN BLH LIMA-HAMILTON

Standard Steel Works Division

BALDWIN-LIMA-HAMILTON

Dept. 8816, Standard Steel Works Division
Baldwin-Lima-Hamilton Corporation, Burnham, Pa.

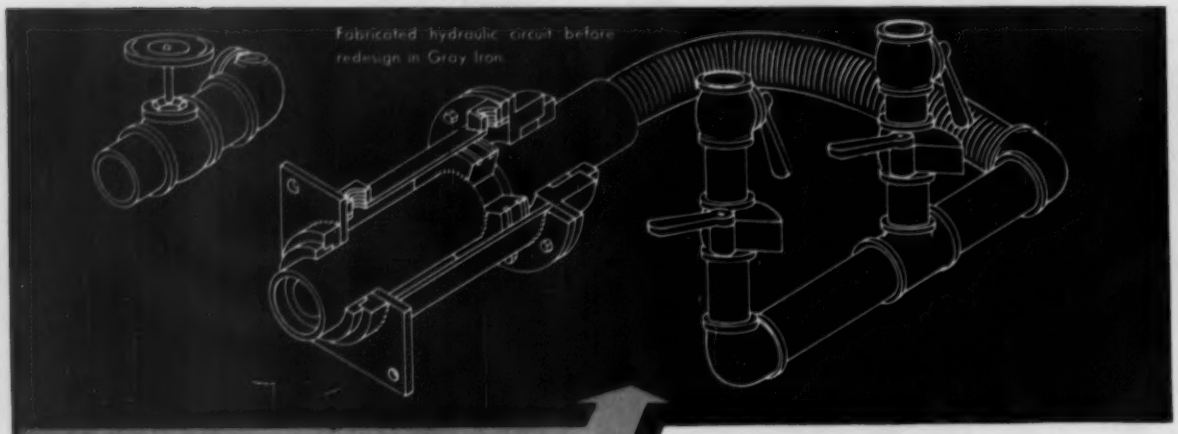
Please send me new Standard Steel Works folder containing detailed information on Forged Weldless Rings & Flanges.

Name_____ Title_____

Company_____

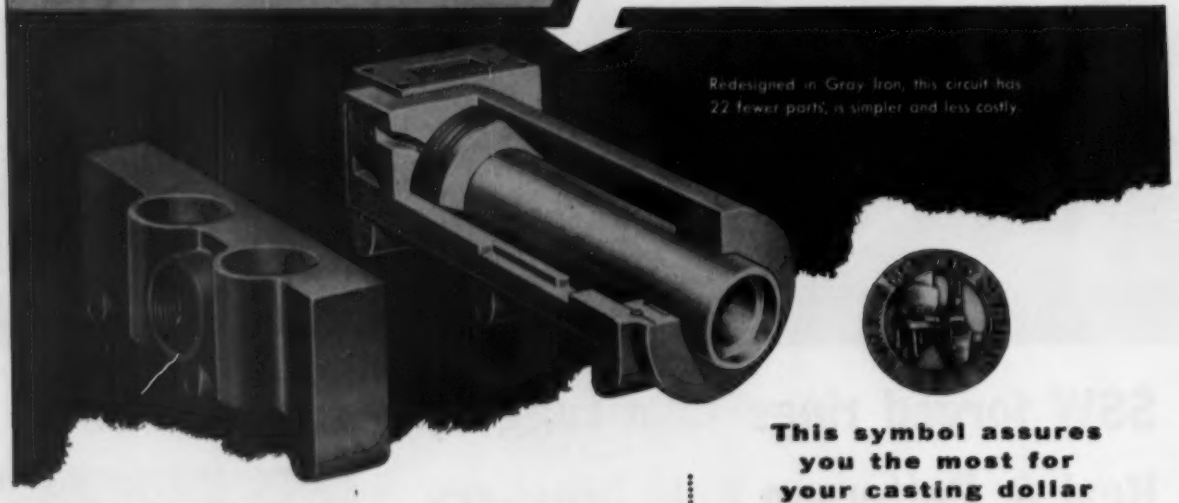
Address_____

City_____ Zone____ State____



Fabricated = 35 Parts

Cast in Gray Iron = 13 Parts



22 parts have been eliminated from this hydraulic circuit by redesigning in Gray Iron. The cast unit is compact, more efficient and less costly. It has done away with many external connections and all welding and pre-weld preparation formerly required.

Many such important savings are inherent in the Gray Iron casting process as compared with fabricated assemblies. Consider Gray Iron's unique engineering advantages in redesigning your products.

Call your nearest Society member foundry and the full facilities of this association will be available to you. Or, write direct to Gray Iron Founders' Society, Inc., National City-E. 6th Bldg., Cleveland 14, Ohio, for helpful technical and business information.

This symbol assures you the most for your casting dollar

Here's why it pays to call in one of the more than 500 leading foundries displaying the Society symbol:

- The most recent technical and business information is available to each member through the Society to help you design better products at lower cost.
- The use of sound cost accounting procedures is recommended and encouraged among Society member foundries, assuring full value for your casting dollar.
- Improved castings result from the advanced techniques and the high sense of responsibility of Society members.

MAKE IT BETTER WITH GRAY IRON

GRAY IRON FOUNDERS' SOCIETY

Production Pointers from GISHOLT

MASTERLINE GISHOLT SINCE 1887

THE MACHINE TOOL SHOW CHICAGO, ILL. SEPT. 8-17, 1954 INTERNATIONAL EXPOSITION

BOOTH 1413

The Gisholt MASTERLINE medallion will identify this new and improved series of machines to be shown for the first time at the Machine Tool Show in Chicago in September. See them at work in Booth 1413.

PRE-SHOW ISSUE

SINGLE PASS *JETRACER* IS DOUBLE-TOOLED TO SPEED PRODUCTION

Unique Setup on No. 12 Automatic Lathe Cuts Costs on Differential Gears

Jobs like this may open your eyes to some new money-saving ideas with the Gisholt *JETRACER* unit. Here's how this manufacturer does it:

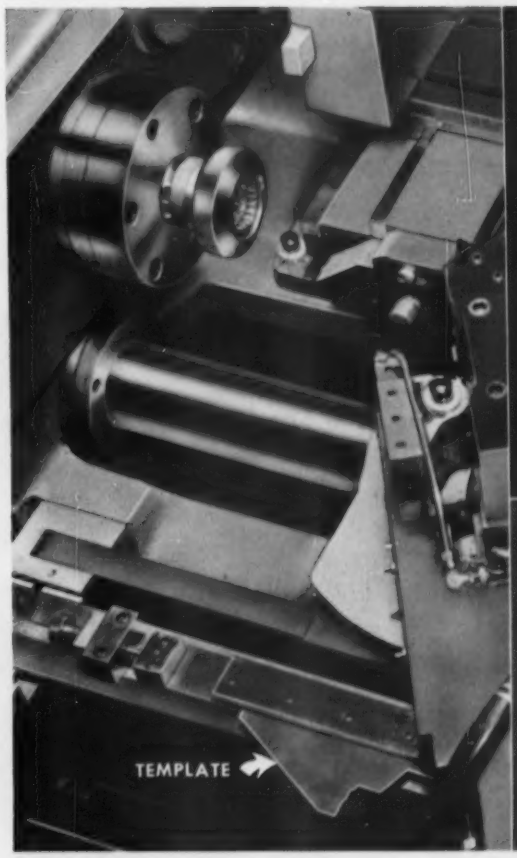
To machine steel forgings for differential gears, two No. 12 Automatic Lathes are equipped with *JETRACER* units, both of which are double-tooled. Gears are held on a segmented-sleeve type air-operated expanding mandrel and driven by a key in the splined I.D. Double-tooling on both tracer slides makes it possible to complete each operation in a single pass.

The line drawing illustrates the first operation. Tool "A" faces the bevel, chamfers the edge and turns the O.D. As tool "A" completes its cuts, tool "B" engages work, facing, co-boring, facing the co-bore and chamfering the corner of the splined I.D. Meanwhile, the rear slide feeds in with a single tool to face the back of the flange and shave-turn part of the hub. Floor-to-floor time is a fast 0.8 minute.

The second operation on the other end is completed in the same manner on the second No. 12 Automatic Lathe, also in 0.8 minute. One operator handles both machines to keep production humping.

It's the combination of smart tooling on the JETRACER unit with the speed of the No. 12 Automatic Lathes that accounts for the swift, accurate production of these parts.

(If you'd like to see more cost-cutting JETRACER *applications, ask for folder —Form 1171.)*



Machining of these differential gear blanks is done with setup shown in drawing. Tools on tracer slide engage in quick succession while simultaneous cut is made with rear slide. Note template for tracer follower at bottom of machine photo.

Layout for 1st operation

Work piece for 2nd operation

At the SHOW:

No. 12 and 24 AUTOMATIC LATHES—See single and multiple passes with *JETRACER* Unit. Three new models; one with full automation.

GISHOLT

TIME-SAVING IDEAS

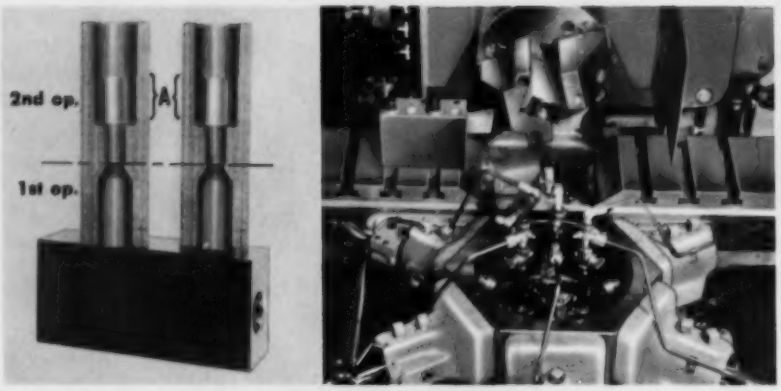
CUTS COSTS BY COMBINING INTERNAL MACHINING AND BURNISHING

Fastermatic Automatic Cycle Is the Answer

To cut costs on these steel block check valve bodies, the producer wanted them internally machined and burnished in two sequential operations on two 1F Fastermatic Automatic Turret Lathes.

By using a special two-jaw air chuck, the job was quickly and simply accomplished. Used for both operations, the special chuck has one stationary jaw, V-block shaped, to locate the work on center, with a dead stop at the rear for longitudinal location. The second jaw clamps the piece by moving in and out.

In the first operation, the valve seat is drilled, formed and reamed; the large bore is taper reamed; and the valve body is faced on one end. Time: 1.46 minutes. In the second operation, the other end of the piece is drilled, bored, co-bored, chamfered and reamed. The operation is then completed by feeding a special turret-mounted burnishing tool into bore "A" to obtain a 20 micro-inch R.M.S. finish. Time: 1.78 minutes.



With a minimum of special equipment, the Fastermatic incorporates the internal burnishing operation as part of the automatic cycle.

Total time for the first operation is only 1.46 minutes, and only 1.78 minutes floor to floor time is used for the second operation—including burnishing bore "A" to a 20 micro-inch R.M.S. finish.

AT THE SHOW:

FASTERMATICS—continuous automatic operation. New setup features make small lot production economical with simple, fast changeover.

TWO CHUCKS ON SADDLE TYPE LATHE HANDLE LONG WORKPIECES

Long oil well drill tubes machined quickly, easily with this setup

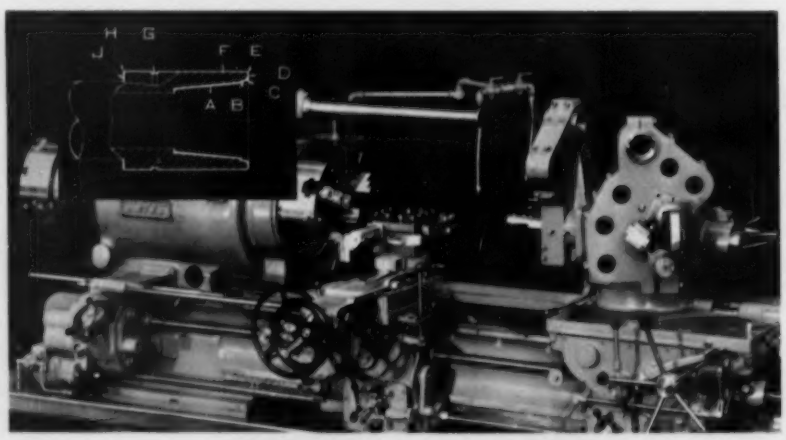
What's the fastest, easiest, safest way to hold an oil well drill tube and machine on end?

Here's one way of doing it:

The long tube is "double-chucked" in a 4L Saddle Type Turret Lathe, using two 24" 3-jaw scroll chucks, one at front and one at rear of the spindle. Result: whip is prevented; distortion is avoided.

Machining is low-cost and simple. First, "D" is faced from the square turret. Next, "A" is step-bored from two multiple-tooled stations on the hexagon turret, which also rough and finish co-bore "B," chamfer "C" and "E" and turn "F." Two more stations on the hexagon then rough and finish taper ream "A," and a special holder on the square turret simultaneously grooves "G," chamfers "H" and faces "J."

"A" is then single-point threaded, using the full-length lead screw and a special taper attachment cam on the square turret carriage. This completes the job.



Machining long workpieces without whip and distortion is simple, fast and easy with this two-chuck setup on a Gisholt Saddle Type Turret Lathe.

AT THE SHOW:

SADDLES—new higher speed, more powerful machines. *JETRACER* will be demonstrated on both bridge type cross slide and hexagon turret mounting.

THE SHOW . . . SEE GISHOLT!

THE MACHINE TOOL SHOW

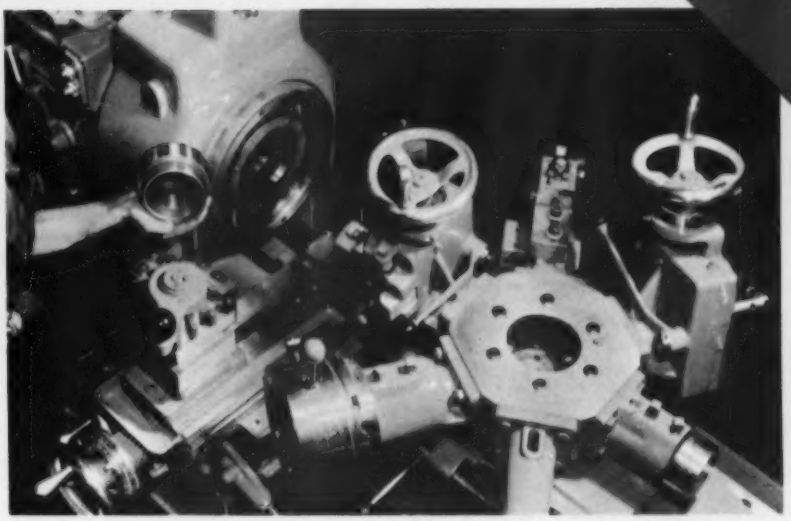
BOOTH 1413

HERE'S EXTRA SPINDLE BORE CAPACITY WITH OUTSIDE-OPERATED COLLET CHUCK

Here's a good idea to keep in mind: You can work right up to the limit of your spindle bore capacity. This producer is doing it with his Gisholt No. 5 Ram Type Turret Lathe, tooled to machine threaded adapter bushings from 4⅝" seamless steel tubing. An outside-operated collet chuck does the trick.

Tooling is also well planned. Parts are finished in minimum time—only 4.2 minutes floor to floor. Hexagon turret tools bore, co-bore, turn, form, chamfer, thread the O.D. and tap the I.D. Square turret tools face and chamfer with cut-off from the rear tool post.

An outside operated collet chuck arrangement provides the extra capacity needed to complete this job and permits using a smaller, less expensive machine.



AT THE SHOW:

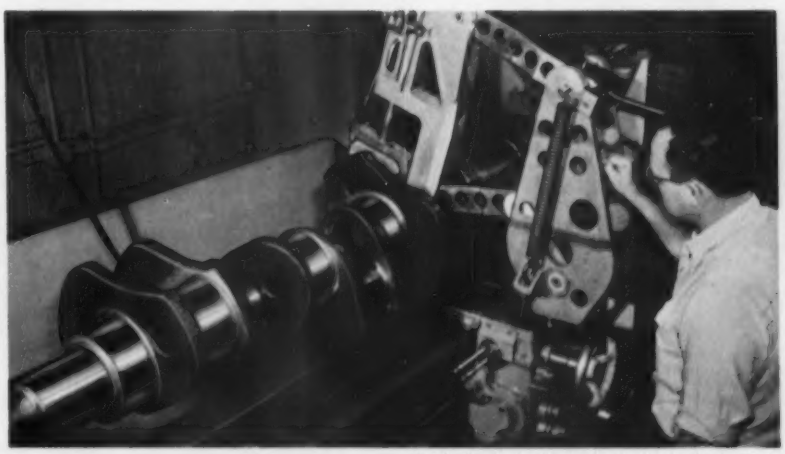
See new Ram Type models, including the 4½" spindle bore No. 5. Also, first showing of the new Electram for high-speed, automatic operation on small parts.

HOW TO SUPERFINISH CRANKSHAFT BEARINGS ON A LATHE

No. 4 attachment makes possible smoother surfaces with very small investment

Even on limited production, you can take advantage of the benefits of Superfinishing. Attachments can be mounted on your own lathe, thus saving the cost of a special machine. In this case, large diesel engine crankshafts, main and pin bearings are Superfinished in one operation. Costs are held low by a Superfinishing attachment with a special latch-on type, follower-arm.

Nine bearing surfaces are Superfinished with four minutes stone contact time per bearing and one minute to position the attachment for the next bearing. A final surface finish of 3 to 5 micro-inches R.M.S. is attained, compared to 25 to 30 micro-inches R.M.S. before Superfinishing.



This special Superfinishing attachment on existing equipment eliminates polishing and lapping operations to insure better crankshaft performance.

AT THE SHOW:

SUPERFINISHERS—machines working continuous runs and job lots. Demonstrations to show reasons for Superfinish and how to control size.

TALK TO GISHOLT ABOUT MACHINE TOOL LEASING

GISHOLT

TIME-SAVING IDEAS

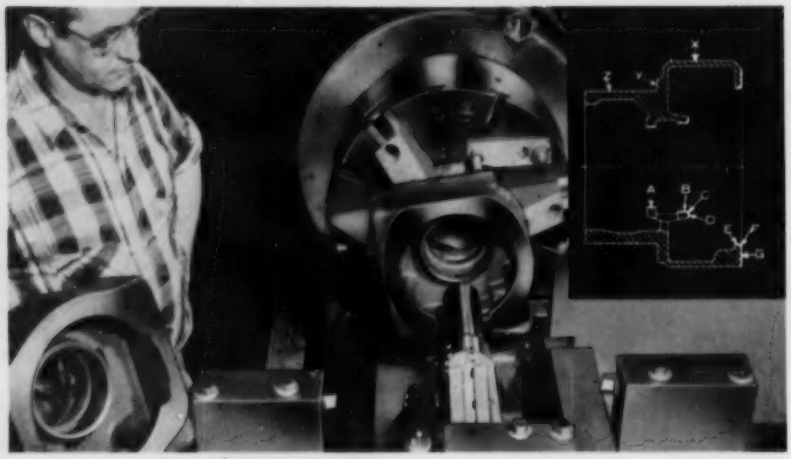
AWKWARD GEAR HOUSINGS HANDLED EASILY THROUGH SMART TOOLING

Simplimatic setup with 9 tools, bores three diameters simultaneously

The manufacturer of a well-known farm tractor line had a problem in machining the awkward cast iron gear housing you see here. Smart tooling and the Gisholt Simplimatic Automatic Lathe are proving the answer.

The operator sets the rough workpiece on a special angle plate bracket providing a loading rest. This bracket also serves as a work-driver. Work is then placed against jacks at "Y" and chucked on the long hub at "Z" in a 3-jaw air chuck.

The center slide carries a piloted boring head. This is used for rough and finish boring "A," "B" and "E" as well as chamfering "C" and "F" and facing "D." When this work is completed, the head holds up while front and rear slides rough and finish face "G." This provides complete concentricity for all surfaces and gives excellent finishes free of tool interference.



Through the speed and economy of operation provided by the Simplimatic Automatic Lathe, floor-to-floor time on this job is only 3.4 minutes. Fourteen pieces are produced per hour, with 80% efficiency.

Three diameters are bored simultaneously in awkward workpieces by combining careful tooling with the versatile Simplimatic.

AT THE SHOW:

SIMPLIMATICS—50 h.p. machine on bevel gear blanks. Many new machine features include greater spindle speeds and automatic lubrication to the slides.

BALANCER HAS WELDING UNIT FOR ON-THE-SPOT CORRECTIONS

Correction equipment—either by addition of weight such as operator indicates here, or by weight removal, can be incorporated by any Gisholt Balancing Machine. New Type S catalog, Form #1165, gives complete details.

High Production Setup for Balancing Automotive Flywheels

You know the speed, efficiency and accuracy of manufacturing operations demanded by the automotive industry. Here's how vital balancing of automotive flywheels measures up to these requirements. This Gisholt 1SV1 Static Balancer measures, corrects and inspects these flywheels at a rate of 36 seconds per part.

It's a simple operation. As the flywheel is rotated, the Amount Meter tells the operator exactly how many correction lugs are needed. The strobe lamp, flashing on the numbered dial below the part, indicates where they are to go.

Welding equipment, mounted right on the machine, permits correcting the parts for balance in a single handling. The operator places the correction lug against the upper electrode of the welding gun where it is held magnetically until applied at the indicated angle. Then, a quick check to assure the part is within the prescribed tolerance—and the operation is completed.

Maximum efficiency and accuracy are attained by combining measurement, correction and inspection for balance in a single, fast operation.

AT THE SHOW:

BALANCERS—See actual production runs and demonstrations. Bench, vertical and large-capacity machines in use on static and dynamic balancing jobs.

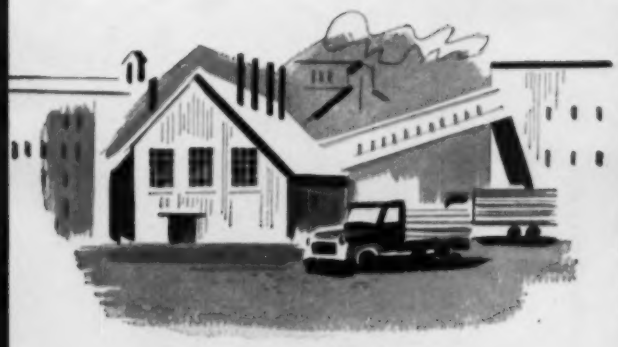
No. 7-855
640

THE GISHOLT ROUND TABLE represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

GISHOLT MACHINE COMPANY

Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES



WEIRTON

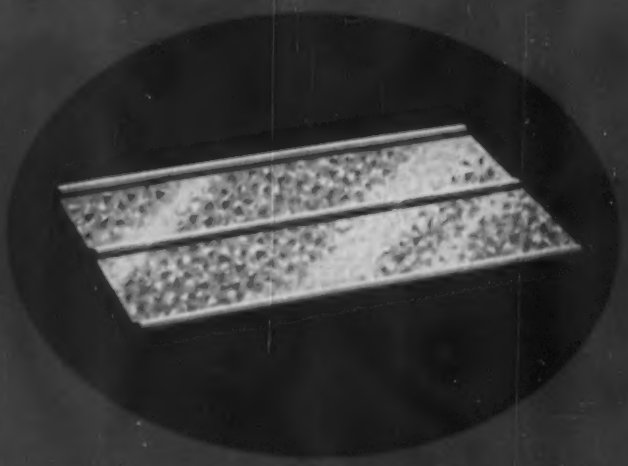
GALVANIZED SHEETS

for long-lived roofing and siding

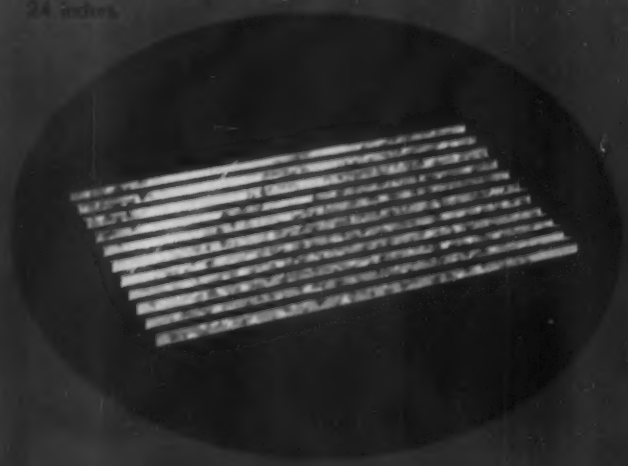
There's an easy way to solve roofing and siding problems quickly, dependably, economically. That's the Weirton way—with Weirton galvanized steel sheets. Their tight zinc coating resists cracking, peeling and flaking. The strength of steel plus the corrosion resistance of zinc gives added years of life. And long experience shows that galvanized sheets give more protection, with less maintenance and at lower cost.

Weirton's modern production processes, plus close quality control all along the line, make Weirton galvanized sheets a best buy for your roofing and siding needs.

Famous Weirton "Safety Drain" galvanized steel sheets combine maximum protection with outstanding good looks.



Weirton galvanized V-Crimp sheets are made in 2V-, 3V-, and 5V-crimped, and in gauges 26, 28 and 29, covering width, 24 inches.

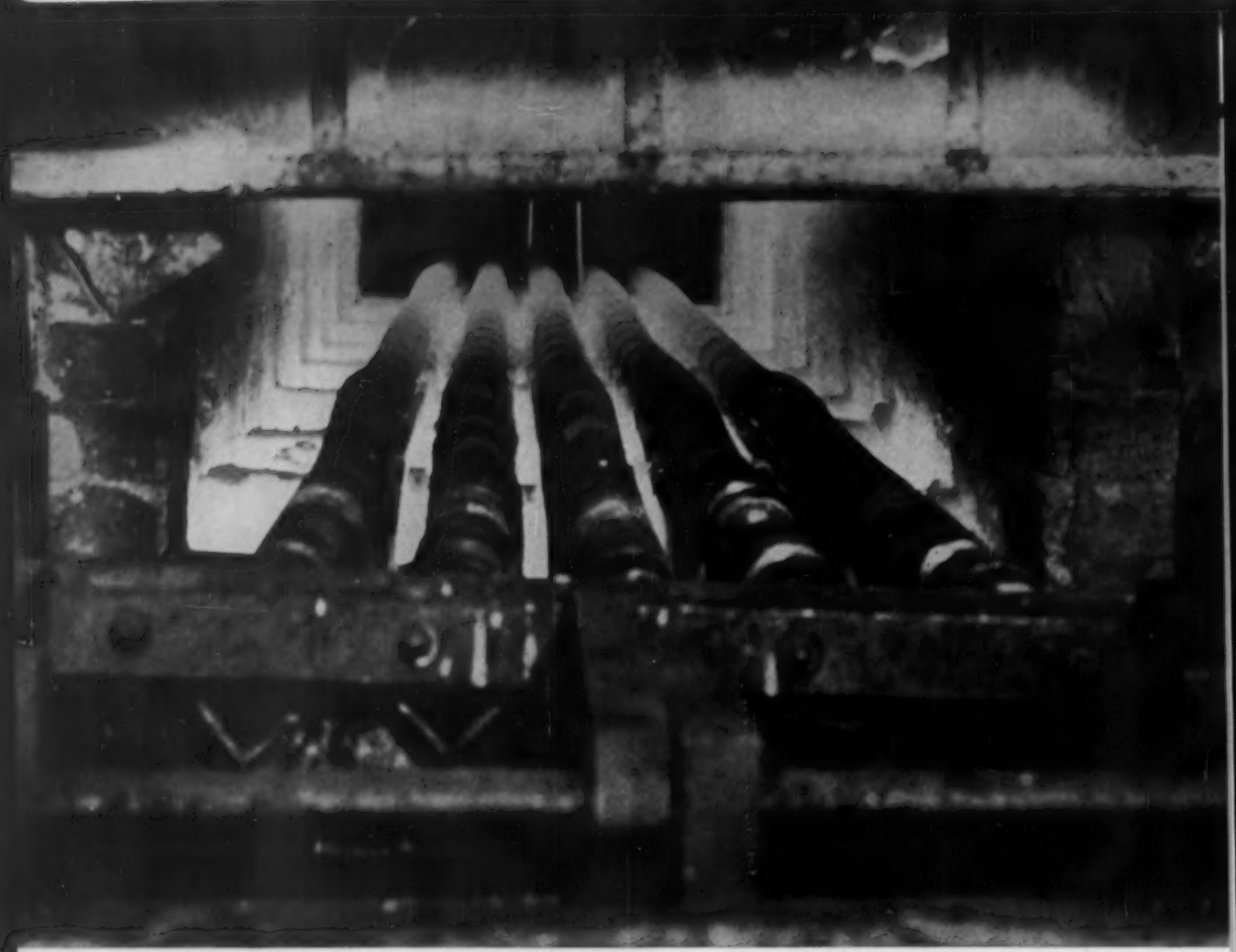


Weirton galvanized corrugated steel sheets are most economical to first cost, and are the strongest form of steel roofing because the corrugations strengthen the entire sheet.

WEIRTON STEEL COMPANY

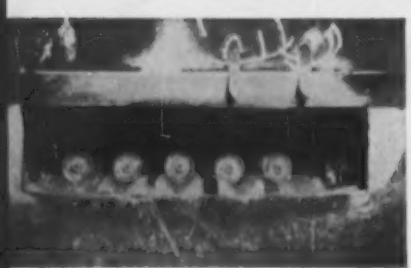
Weirton, West Virginia

NATIONAL STEEL CORPORATION



Service that ruins stainless steel rails in 2 to 3 months leaves...

CARBOFRAX® SKIDS UNTOUCHED AFTER TWO YEARS



After two years, here's how the trough-shaped CARBOFRAX skids look—practically untouched by the thousands of steel blanks that have slid over them.

CARBOFRAX silicon carbide skid rails have already outlasted stainless steel rails 8 to 12 times in this pusher-type heating furnace...and are still in service! The side-fired gas-burning furnace is used by J. W. REX COMPANY, LANSDALE, PA., to heat 13-pound circular steel blanks to 1590°F at a rate of 115 blanks an hour.

The stainless steel skids the Rex Company used before failed regularly every two to three months, while frequent shutdowns to straighten or replace the rails ran up operating costs and curtailed output.

Silicon carbide's hot strength and resistance to wear at the operating temperature have completely eliminated these shutdowns...there hasn't been one since the CARBOFRAX rails were installed in May, 1952. And the heat conductivity of the trough-shaped CARBOFRAX skids assures that the blanks get uniform heating.

CARBOFRAX skids don't just outlast other skids. *Their first cost is usually lower than that of either water-cooled pipe or of those made of special heat-resisting alloys.* Why not get full information about CARBOFRAX skids right now, before your present ones wear out? Address Department 85, Refractories Division, The Carborundum Company, Perth Amboy, N. J.

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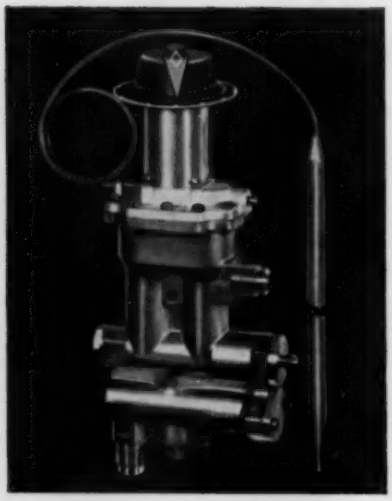
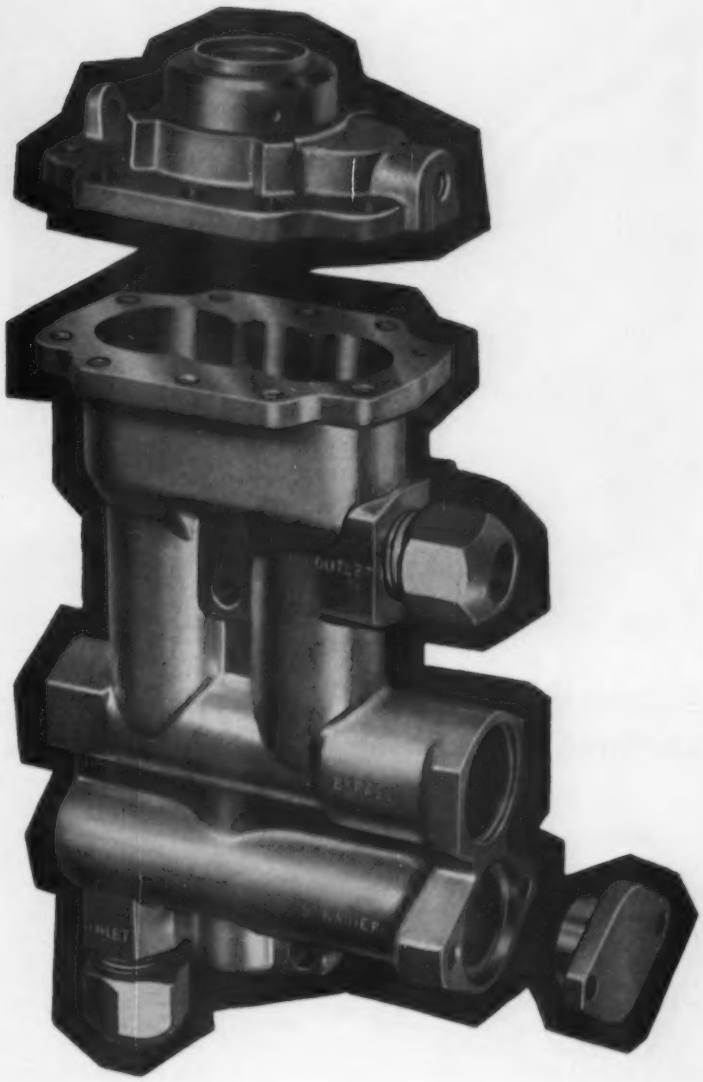
manufacture of

DETROIT SELECTAFLOW CONTROLS

greatly improved by

MUELLER BRASS CO. FORGINGS





One of the finest thermostat control mechanisms for year-around air-conditioning systems is the automatic SELECTAFLOW, a product of the Detroit Controls Corporation. To maintain the high quality of this efficient unit and at the same time speed up and simplify assembly, the body, bonnet and side cover are being forged and completely machined to close tolerances by the Mueller Brass Co. In all, thirty-four machining and finishing operations are performed. This is but one more example of how Mueller Brass Co. machined forgings have improved a product and speeded production. With a wide range of copper-base alloys for forgings, a tremendous background of product engineering, and facilities for precision finish machining, the Mueller Brass Co. can supply machined brass or bronze forgings to *your exact specifications*. It will pay you to consider Mueller Brass Co. forgings for your new or redesigned products. Write us for full color catalog and technical information.

MUELLER BRASS CO. STREAMLINE PRODUCTS

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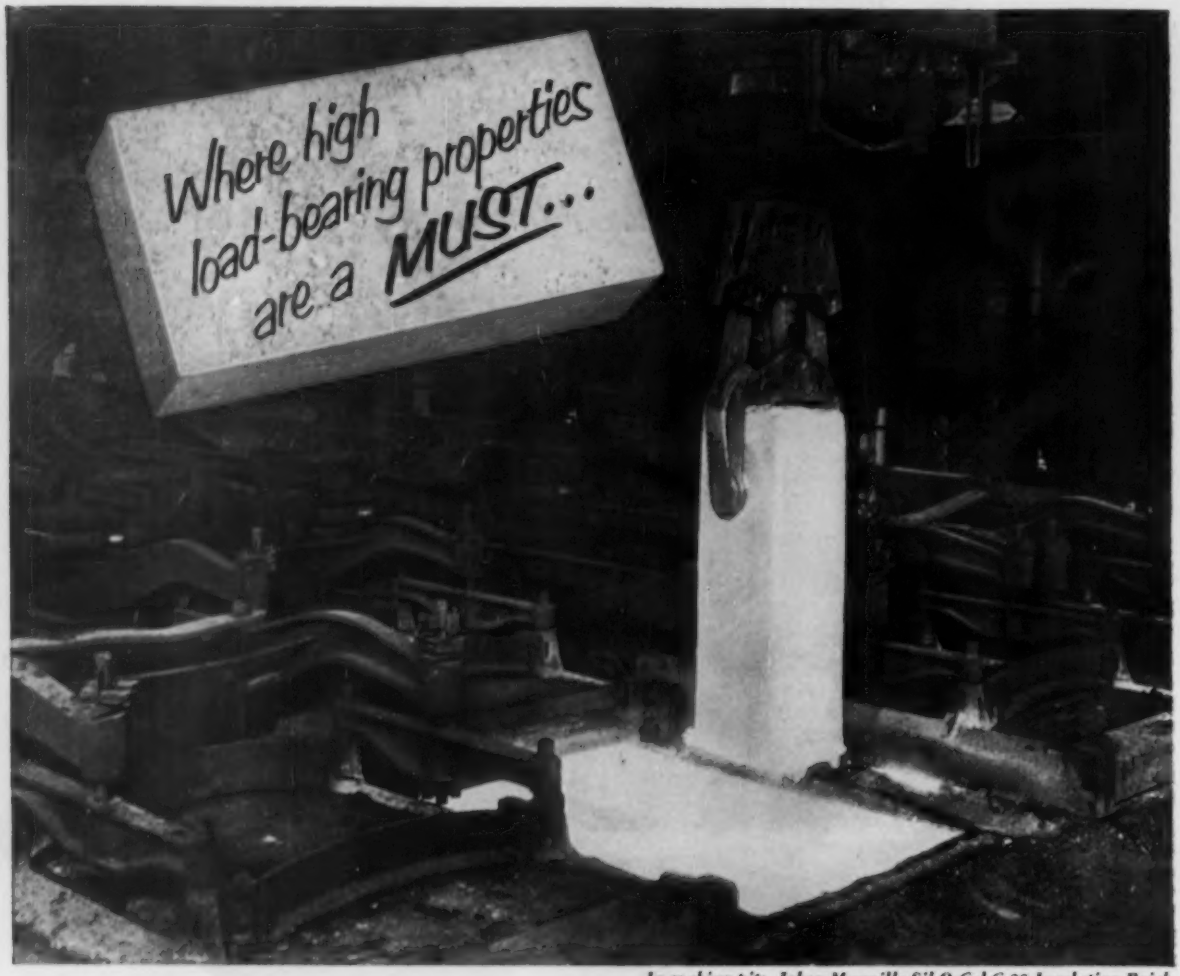
PORT HURON 24, MICHIGAN



In soaking pits, Johns-Manville Sil-O-Cel C-22 Insulating Brick provide outstanding performance as back-up insulation.

Specify
Johns-Manville SIL-O-CEL C-22 Insulating Brick

the diatomaceous silica brick that retains its high cold crushing strength of 700 psi throughout normal service range

Because of its exceptional strength Sil-O-Cel C-22 Insulating Brick has gained wide acceptance as an all-purpose insulating brick. It is especially recommended for soaking pits, open hearth bottoms, slab heating furnaces, hot blast stoves, coke ovens and other high temperature equipment.

Millions of microscopic cells provide Sil-O-Cel C-22 brick with excellent heat resistance up to 2000F. It has a thermal conductivity of only 1.88 Btu in/sq ft/F/hr at 1000F mean temperature. In addition, with a density of 38 lb/cu ft, it is light and easy to handle.

For direct exposure or back-up to 1600F, use Sil-O-Cel 16L Insulating Brick. This newest member of the J-M diatomaceous silica insulating brick family has *less than 0.1% reversible thermal expansion at 1600F.* Conductivity is 1.07 Btu in/sq ft/F/hr at 1000F mean temperature with a density of 33-35 lb/cu ft. Cold crushing strength is 350 psi. Sil-O-Cel 16L serves equally well as back-up insulation or exposed refractory lining.

For back-up at higher temperatures, specify Sil-O-Cel® Super Insulating Brick with an unusually high temperature limit of 2500F.

Write today for further information on Sil-O-Cel Insulating Brick and Insulating Fire Brick. Ask for Brochure IN-115A. Address Johns-Manville, Box 60, New York 16, N. Y. In Canada, 565 Lakeshore Road East, Port Credit, Ontario.

Johns-Manville *first in* **INSULATION**

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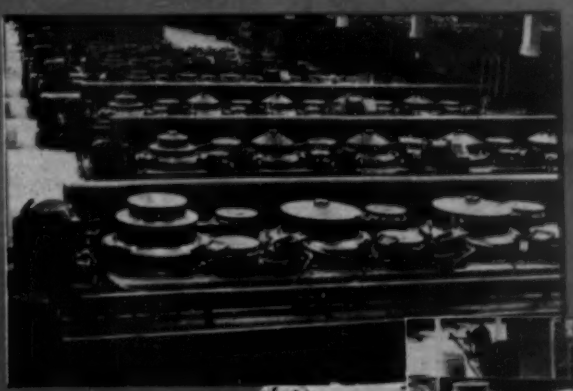
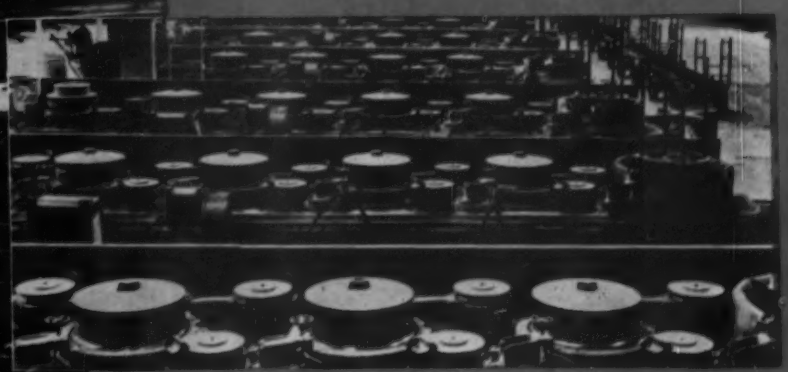
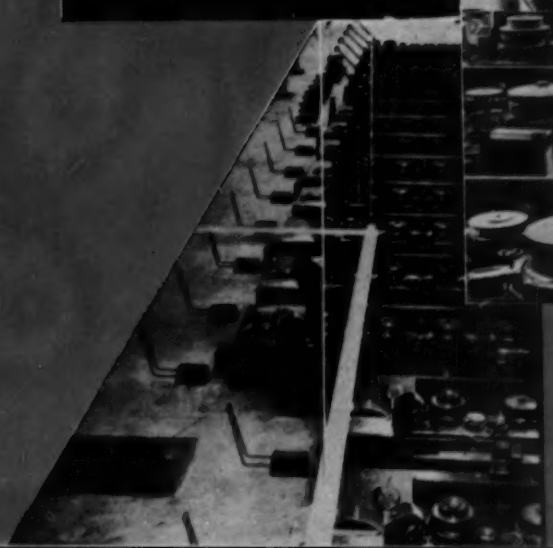
Let your high-volume needs in wire be matched by Vaughn Motoblox' high productivity! These famous machines meet quotas with quality—in speed and dependability. A Vaughn engineer will be happy to give you the facts, at your convenience.







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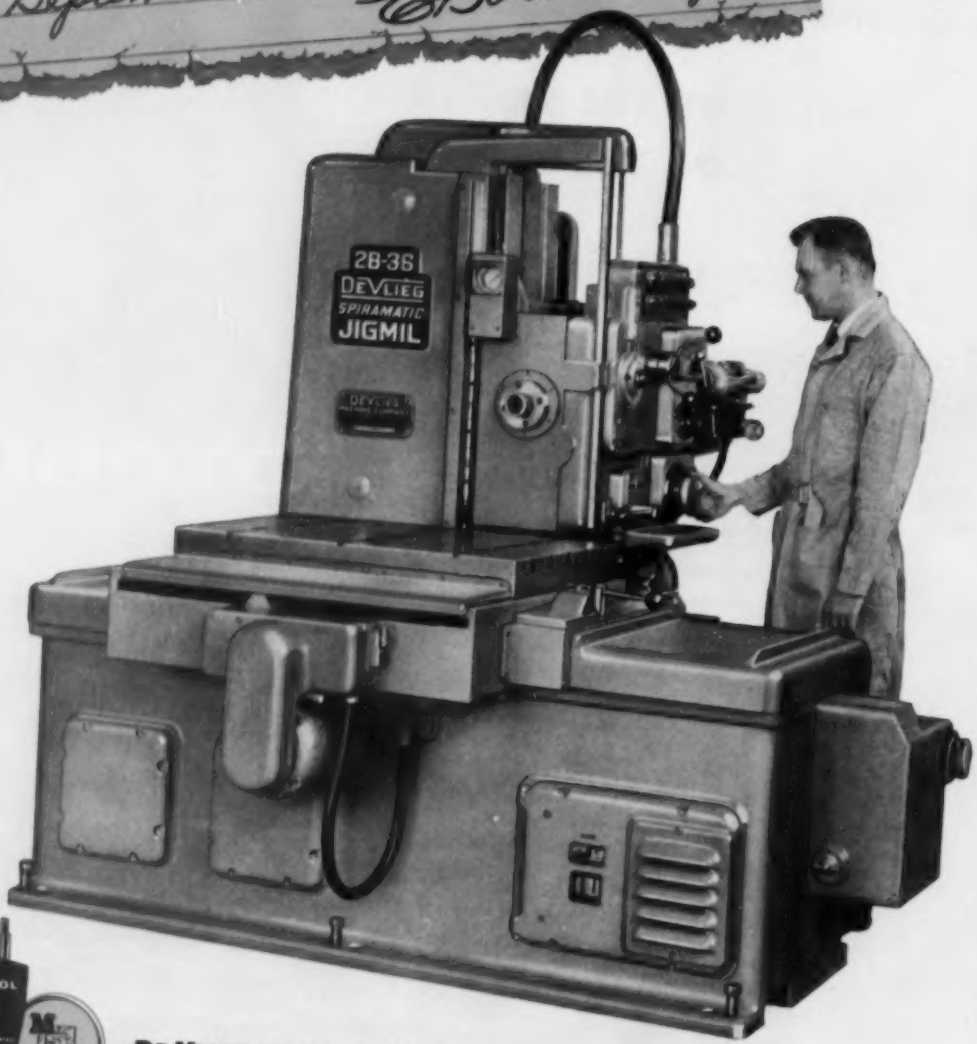
COMPLETE COLD DRAWING EQUIPMENT—Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.

Be sure to see this Brand New Model 2B-36 DeVlieg Spiramatic Jigmil which will be introduced at the Machine Tool Show at Chicago—

See this new machine "JIGLESS BORING" parts under production conditions at the DeVlieg Exhibit, Booth 1317, September 6-17

C B DeVlieg



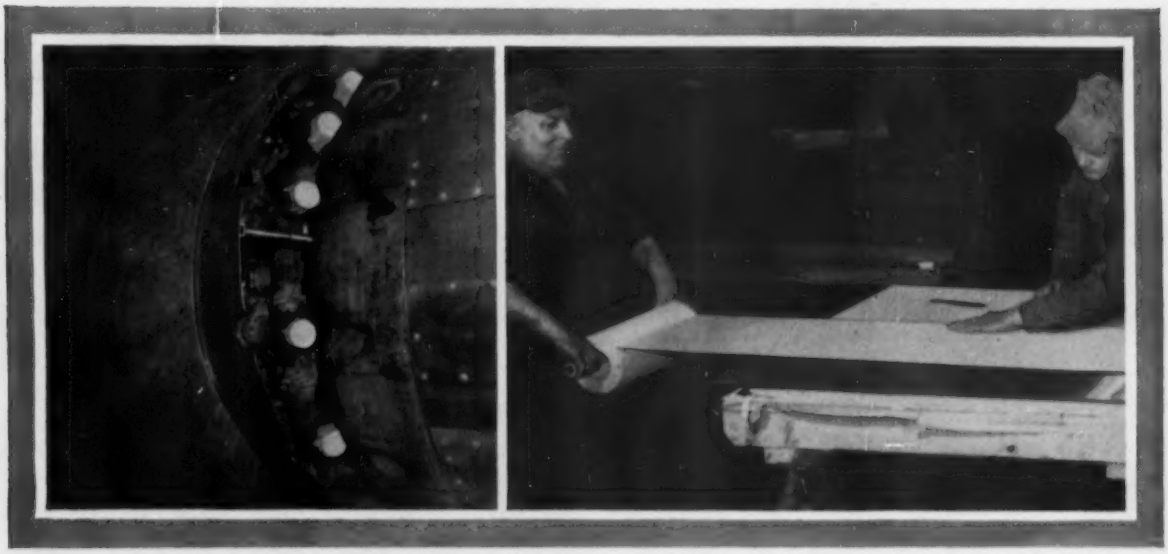
THE MACHINE TOOL SHOW

DE VLIEG MACHINE CO. 450 FAIR AVE., FERNDALE • DETROIT 20, MICH.

Polyken

CONTROLLED STRENGTH **TAPES**

KEEPS DIRT OUT OF ENGINES, SCRATCHES OFF STAINLESS STEEL



We're showing you these examples of *Polyken* Tape doing two entirely different jobs to illustrate what we call *controlled strength.*

The example at left shows one *Polyken* Tape being used to seal the exhaust and carburetor ports in aircraft engines to keep foreign matter out of the moving parts during overhaul. The tape provides ease of application, high resistance to puncture, and clean pull-off qualities.

The other example shows still another *Polyken* Tape being applied to protect the surface of stainless steel sheets. The excellent abrasion resistance provided by cloth-backed *Polyken* Tape shields future milk tank liners from dents, pits, and scratches—flaws which would have to be removed by hand at great cost. What's more, the tape stays on, even under the high pressures of the forming operation—and then strips off clean!

This is *Polyken controlled strength* —the right combination of adhesive and backing for the job. You get the controlled qualities *without added cost.*

The coupon below will bring you complete information about *Polyken* Controlled Strength Tapes.

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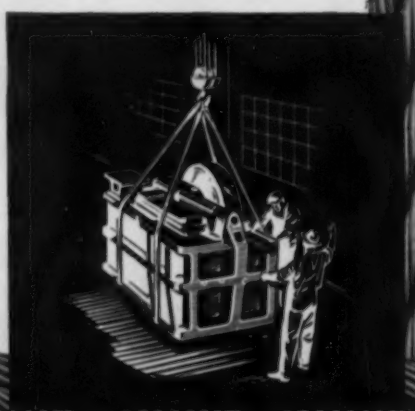
Royal Blue is made of Roebling's new 1105 wire, the strongest, toughest wire developed up to now for use in any wire rope.

Royal Blue Wire Rope is as enduring as the wire from which it is made.

Write us for full facts on Royal Blue Wire Rope, or contact your Roebling distributor.



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ACE IN THE HOLE!

Had this smug feeling lately? Pretty nice! Also profitable! You could feel the same way in the shop, too—if you'd change over to CUT STEEL! For this revolutionary, new type abrasive has been a real money-maker for foundries who have tried it and changed over to it. Made by an exclusive process developed by METAL BLAST, CUT STEEL is *not* air-formed, cast or made from wire. Instead, it is actually *cut* from high quality, alloy steel, in a variety of shapes and sizes. And it's producing spectacular results in the cleaning of castings and forgings. Seems like the happy combination of special material, method of forming and the fact that it work-hardens gives CUT STEEL cleaning properties possessed by no other abrasive.

If you feel the need for cutting costs in your cleaning operation—here's the sure way—change over to new CUT STEEL! A trial order will prove it!

Sooner or later, you too, will change to CUT STEEL!

CUT STEEL

ABRASIVE

ANNEALSHOT and SUPER-ANNEALSHOT

PRODUCTS OF

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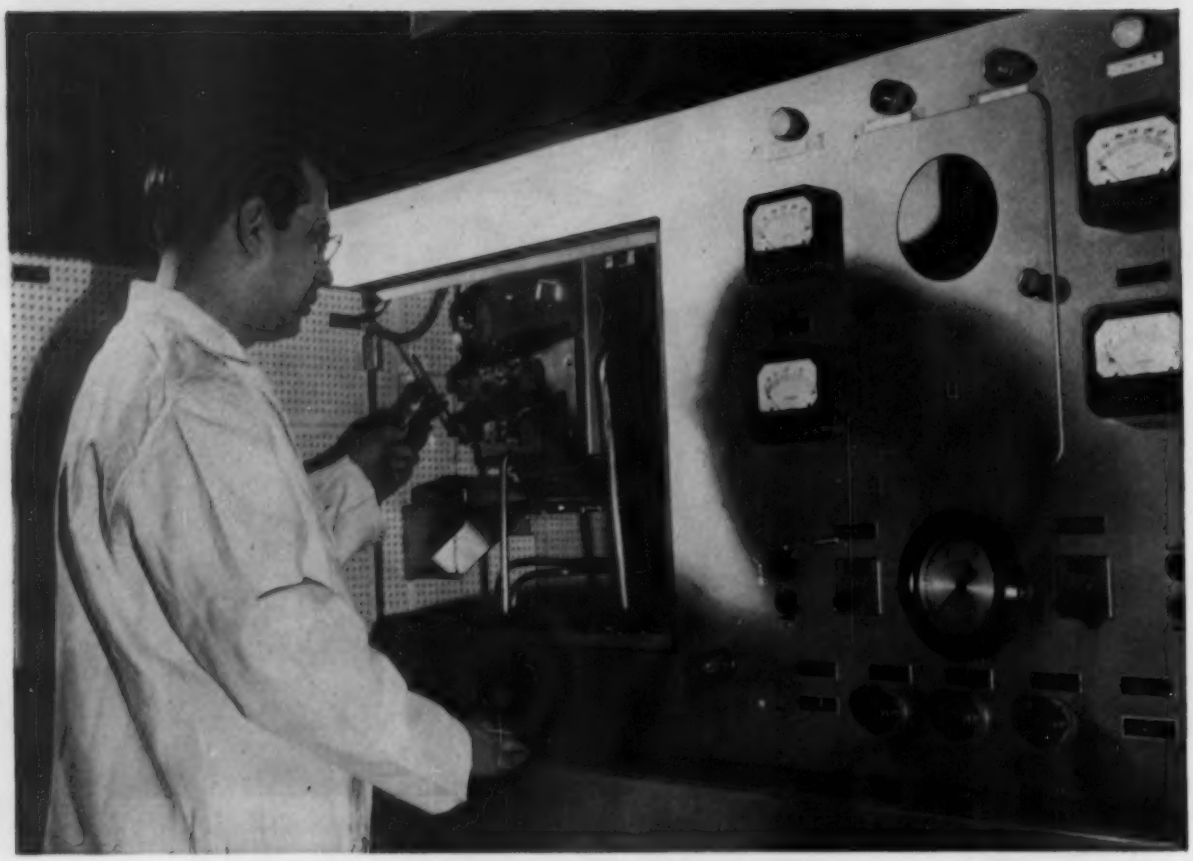
In its original form, CUT STEEL resembles steel grit with sharp edges and corners.

In usage, it rapidly changes to a spherical shape, in a wide variety of sizes.



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Laboratory and Pilot Plant-Scale Development of New Products is an important phase of VCA's Technical Service. Special laboratory equipment makes possible accurate observation of ferro alloy behavior and the improvement of metallurgical processes.

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Bryant Chucking Grinder Company — BOOTH #1015

CMC CLEARING USI
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BOOTH #716

CLEVELAND
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BOOTH #721

speeds installation of any machinery protects accuracy of precision machines

These machine tool builders cut set-up time at the Machine Tool Show from hours to minutes with BARRYMOUNT® Leveling Isolators. No drilling floors, no setting lag bolts, no shimming — they just set their machines on the Barry mounts, adjusted the leveling screws, and the normally tedious, costly job was done.

This is not just a show trick — it's a standard efficiency procedure for new installations and re-installations in large and small plants all over the country. And, *at the show or in your plant,* the isolation built into Barry mounts protects precision machines against vibration from nearby heavy equipment.

Visit us at Booth 153, Production Engineering Show, and a Barry engineer will show you how *you* can simplify installation, protect machine accuracy, prolong machine life, and cut maintenance costs with Barry Machine Mounts.

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Kingsbury Machine Tool Corp.
BOOTH #915

PRECISION PRODUCTION THROUGH MICROMETERS — MICRO MATIC
Micromatic Hone Corporation
BOOTH #1211

MOLINE
Moline Tool Company
BOOTH #1304

Monarch TURNING MACHINES
The Monarch Machine Tool Co.
BOOTH #920

THE MOTCH & MERRYWEATHER MACHINERY CO
The Motch & Merryweather Machinery Co.—BOOTH #606

Onsrud
Onsrud Machine Works Inc.
BOOTH #812

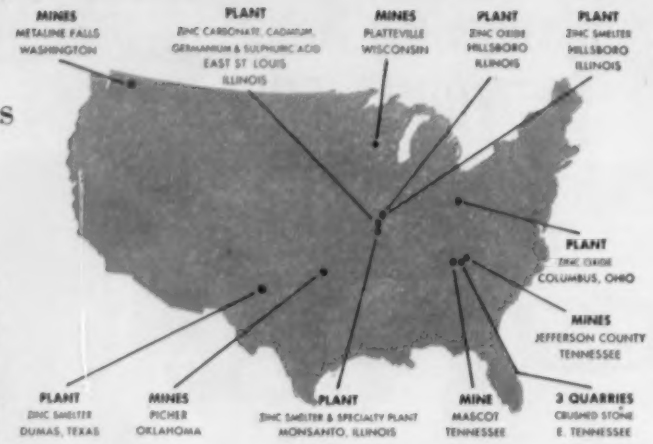
RACINE
Racine Hydraulics & Machinery Inc.
BOOTH #102

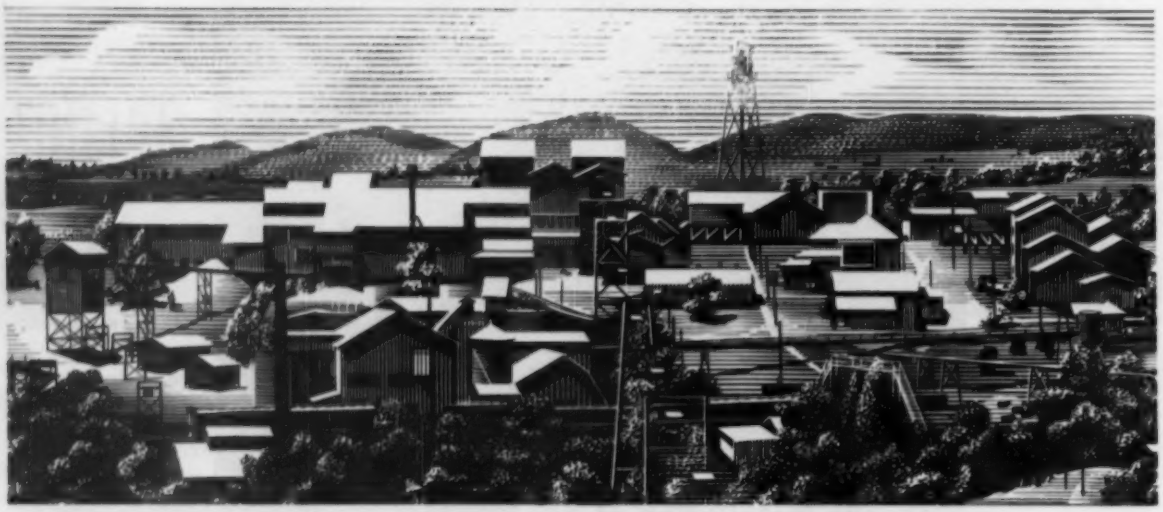
SHEFFIELD
The Sheffield Corporation
BOOTH #1305

Van Norman
Van Norman Company
BOOTH #905

WIEDEMANN
Wiedemann Machine Co.
BOOTH #1420

American Zinc and its products *from* A *to* Z





CONCENTRATING MILL, MASCOT, TENNESSEE

One of the key factors in American Zinc's widespread mining and milling operations. In Tennessee, American Zinc also owns and operates mines in Jefferson County. It is here that one of the largest known reserves of zinc in the United States is found (in excess of 1,250,000 tons of recoverable zinc, proven, with additional large reserves indicated). Other company-owned and operated mining properties are located at Platteville District, Southern Wisconsin; Metaline Falls District, Eastern Washington; and Picher field of the Tri-State Area (Missouri-Kansas-Oklahoma). For the complete picture, see map above.

PRODUCERS OF

ALL GRADES OF SLAB ZINC
ZINC ANODES (Plating & Galvanic)
METALLIC CADMIUM
SULPHURIC ACID
LEAD FREE and LEADED ZINC OXIDES
ZINC CARBONATE
GERMANIUM DIOXIDE
AGRICULTURAL LIMESTONE
CRUSHED STONE

American Zinc sales Company

Distributors for AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, Ohio • Chicago • St. Louis • New York • Detroit • Pittsburgh

The Iron Age Newsfront

Fire Ceramics to Cast Aluminum

Ceramics are now being successfully fired to cast aluminum. First use of the new process is for household utensils. However, the method is expected to make aluminum products usable in industrial applications where chemical corrosion previously prohibited them.

Auto Firms Are Good Bargainers Too

Overlooked in the excitement over supplemental unemployment benefits granted to auto workers in their new contract is that GM and Ford did some neat bargaining themselves. Their "right to manage" clauses are probably the tightest in U. S. industry. They have virtually complete freedom to run their plants as they see fit.

New Use for Titanium

Taking advantage of titanium's outstanding resistance to chloride ion attack, a large company is using the metal to make contact parts for a filter press used in the production of calcium hypochloride. The material shows excellent resistance to chloride pitting.

Offshore Buying May Be Pitfall

Eisenhower Administration may be in trouble in the months ahead over its expanding offshore procurement program. Budget-conscious officials have been quietly stepping up procurement from cheaper foreign sources in recent months.

Gains for Leaded Alloy Steels

Leaded alloy steels are at last making their mark in the automotive industry. After more than a decade of up-hill climb, these steels have been adopted by at least one major producer for use in a steering assembly. Most of the claims made for the leaded materials are being validated on the production floor.

Develop Spray-on Plastisols

New plastisol formulas and specially-designed equipment now make it possible to apply these materials by electrostatic spraying. At least one appliance manufacturer has been interested enough to order equipment and materials. Earlier field tests on appliances, not yet released, have evidently been successful.

Buyers Want More V-8's

The trend toward V-8 engines for passenger cars is building up even faster than many auto industry observers predicted. Assuming that the car market holds up, it is quite probable that within two years, fleet buyers, taxis and trucks may account for nearly all the six cylinder cars produced.

Freight Car Shortage Serious

Just to give an idea how tight the freight car shortage is, one traffic manager figures that if truck lines gave up 10 pct of their business, the railroads couldn't handle it because of the equipment shortage. The situation points up the need for the roads to discard so-called "programs" and start buying heavily on a normal routine basis.

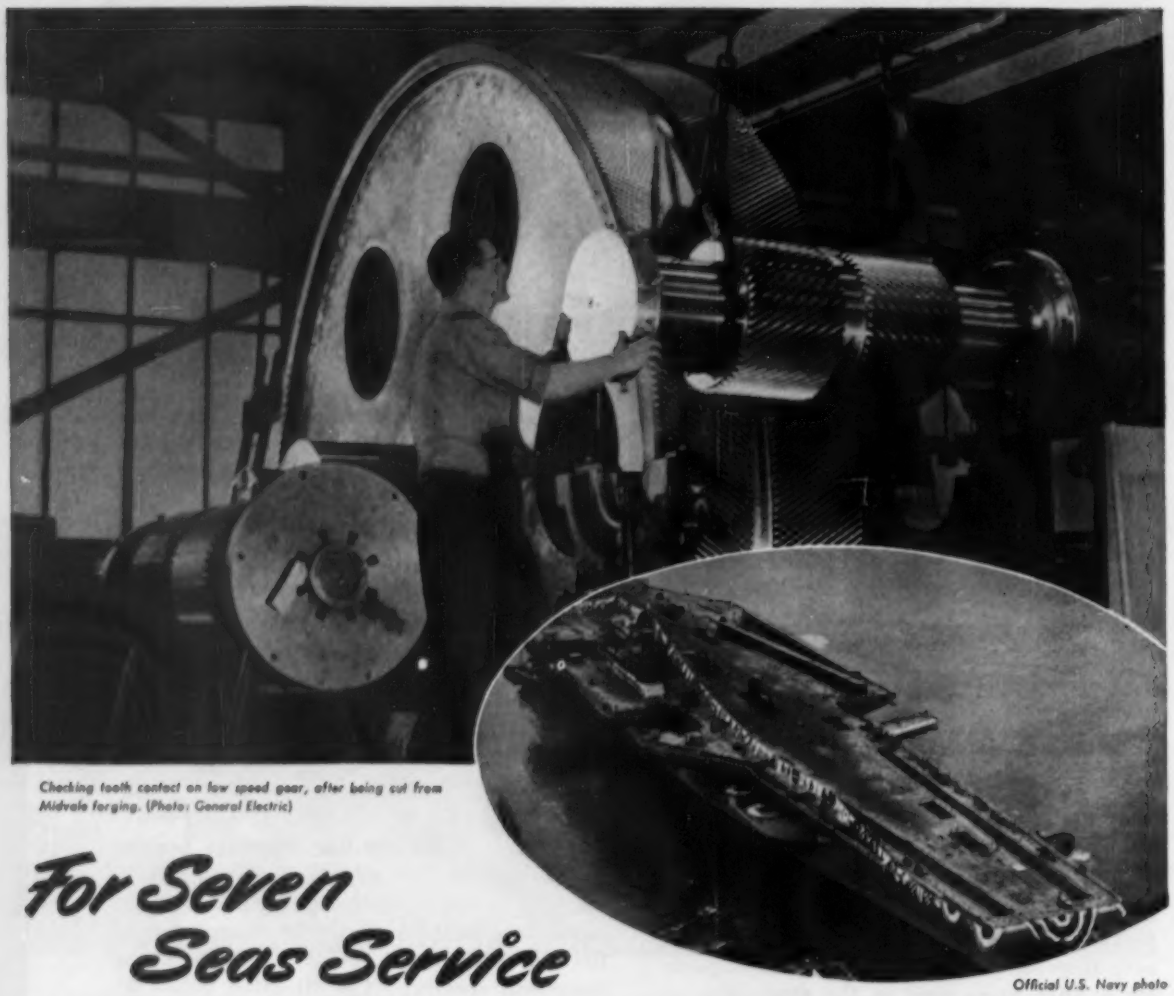
Research Will Boost Equipment Demand

The tremendous growth of engineers and scientists, from 87,000 in 1941 to 200,000 in 1954, points to a healthy demand for machine tools and other capital equipment in years ahead. It means that the country now has more than twice as many men trying to introduce obsolescence into our products and manufacturing methods as we had fifteen years ago.

Hot Weather Cuts Steel Output

Extreme weather conditions have been more of a factor in lost steel production this year than most observers realize. Loss of worker efficiency is high but it could have been worse. Steel companies in recent years have done a good job on improving worker comfort in hot weather.

MIDVALE FORGES 7-TON GEAR RIM



Checking tooth contact on low speed gear, after being cut from Midvale forging. (Photo: General Electric)

For Seven Seas Service

Official U.S. Navy photo

Moving 60,000-ton ships is no job for weaklings. It takes real power . . . lots of it . . . and machinery strong enough to transmit that power to whirling propellers.

Rims for four low-speed gears, used in the General Electric Company's propulsion units totalling more than 200,000 HP (enough to furnish electricity for a city of 1½ million people) for the aircraft carrier USS SARATOGA, were forged by Midvale to convert that power into motion. Rough machined, each weighed 15,640 lbs., approximately, but each required a 73,500 lb. ingot to have a heart big and tough enough for the job.

Inherent alloy strength was developed by proven heat treatment to meet requirements for strength and wear. Machining was supervised by craftsmen with the experience and equipment to handle rough or finish machining of virtually any size.

Careful workmanship . . . in steel making, forging, inspection, machining . . . has earned for Midvale forgings, over nearly fifty years, their reputation for excellent performance and long life.

When you need any forgings . . . gear rims and pinions, rolls, shafting (machinery and ship propulsion), pressure vessels or a variety of other custom steel products . . . call Midvale.

THE MIDVALE COMPANY - Nicetown, Philadelphia 40, Pa.

Offices: New York, Chicago, Pittsburgh, Washington, Cleveland, San Francisco

MIDVALE

FORGINGS, ROLLS, RINGS, FLANGES, CORROSION AND HEAT RESISTING CASTINGS

WRITE-OFFS: Who Will Get Tax Aid?

Sec. Humphrey leads fight to curtail fast amortization . . . DMB is not likely to relinquish power . . . Big issue is diversification of program first planned specifically for defense—By *N. R. Regeimbal.*

◆ FAST TAX amortization to induce industry to expand productive facilities as a hedge against another emergency will be curtailed in the weeks ahead, but the changes on an overall basis won't be too sweeping.

Reason: Despite loud cries of pain from Treasury Secretary George Humphrey about the loss of tax revenue and the "unsoundness" of the program, the Office of Defense Mobilization (which hands out the tax-am favors to industry) doesn't intend to see too much of its power washed down the drain.

Cabinet Divided

Defense Mobilization Board — composed of virtually all the President's cabinet to advise and coordinate mobilization planning—is now reviewing the tax amortization program and will make its recommendations for changes in the next several weeks. Chairman of DMB is Dr. Arthur S. Flemming, head of the Office of Defense Mobilization.

Elements of a rather finely-drawn split in the cabinet are present in the tax amortization study. This also will tend to limit the scope of changes to be made.

Secretary Humphrey made his case in testimony before a House Government Operations subcommittee. He says "tax-am" should be continued, but only on a "highly selective" basis, limited to cases where the goods involved would be "must" military items in case of war, and it should not be used to permit firms which would normally expand to get an interest-free government loan or to finance construction of unnecessary defense facilities in conjunction with expansion of civilian production.

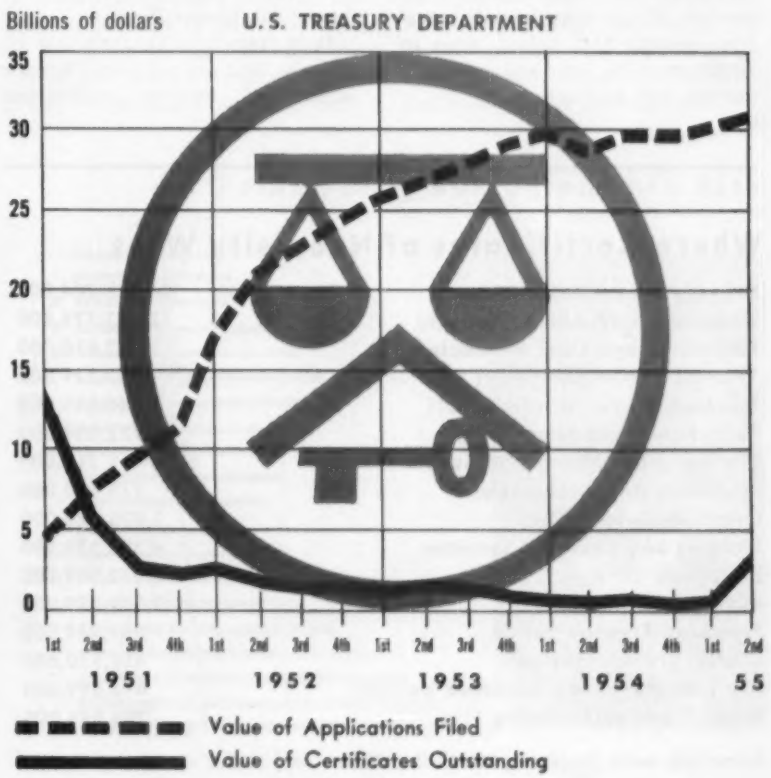
When asked if he agrees with the Secretary, Dr. Flemming tells THE IRON AGE his position will be revealed in the DMB report.

But Dr. Flemming says the review is concerned only with determining which of the 84 goals remaining open should be kept open, not with changing any of the policies under which open goals are being filled with the use of fast tax writeoffs. This would appear to conflict somewhat with Mr. Humphrey's position.

And there is a possibility, the ODM head says, that DMB will recommend that some of the goals now closed be reopened—possibly the steel, aluminum, and other nonferrous production goals as well as goals for facilities to produce semifabricated metals.

One source says that a survey of the goals now open indicates that no more than 20 might be closed.

Amortization—Asked and Granted



For the most part, the goals would be those which are not being filled anyway, and a few which are of questionable defense nature—those which it is possible to classify as "defense supporting," rather than defense production.

At one time, there were 240 expansion goals for which tax amortization was available. This was reduced to 83 with the electric power generating goal reopened last fall when power shortages threatened to curtail natural expansion in the aluminum industry. To date, under the tax amortization program established in the 1950 tax law, tax certificates for fast write-offs for 20,001 new or expanded facilities costing $30,595,004,000 have been issued. Of that amount, about 60 pct, or $18,398,062,000 is eligible for tax amortization in five years, instead of the normal—much longer—period.

Leads to Controls

Through last September, 1654 certificates had been issued for expansion of primary metal industries costing $5.2 billion, most of which were for iron and steel production and fabricating.

Secretary Humphrey is arguing that the fast tax amortization is dangerous "artificial stimulus" which could lead to federal controls over industries involved. He also complains that the effect on the economy of granting certain industries special aid and excluding others could be to damage the country's business health.

Policies under which fast tax amortization is being used are technically unchanged by Congress, but pressure has resulted in a review of the program and a mild curtailment is expected. If the cuts to be recommended by DMB don't satisfy Congress, a House committee will reopen hearings on the program, calling representatives of industry—probably including steel and aluminum—to probe the uses to which fast write-offs are being put. Later, the committee could order further curtailment.

Effect Tax Cut

Diversification in handing out tax amortization certificates has been one of the principal complaints. Critics charge that the practice has veered far from the specified intent of fast tax write-offs when they were authorized during the Korean War.

It is frequently charged that industries that are not even "defense supporting" received concessions.

WANTS CUT: Treasury Sec. Humphrey says too many get write-offs.

Sec. Humphrey in asking for a sharp reduction in the write-off program, says write-offs will cost the government $880 million in taxes during this fiscal year alone. He went so far as to state that the program could stand in the way of general tax reduction.

His implication is that he would favor cutting off defense supporting industries such as railroad equipment, steel and utilities. In recent weeks it has been charged that railroads used their incentives not to purchase new equipment, but merely to replace old, with no resulting increase in freight car totals.

However, railroad spokesmen say a cut in the program will result in substantial reductions in the currently active freight car building program and that had it not been for the program, railroad capacity would be much less than it is now.

This logic can be expected to be repeated by other industries which have found write-offs handy in planning expansion.

Where Certificates of Necessity Went

Primary Metal Industries	**$4,345,284,000**
Chemicals and Allied Products	**2,573,776,000**
Petroleum and Coal Products	**2,032,810,000**
Transportation Equipment	**1,033,179,000**
Machinery (except electrical)	**740,835,000**
Pulp, Paper and Board Mills	**722,059,000**
Electrical Machinery and Supplies	**455,260,000**
Ordnance and Accessories	**335,780,000**
Other Manufacturing	**1,035,820,000**
Utilities and Sanitary Services	**4,386,378,000**
Railroads	**3,872,509,000**
Mining	**1,471,239,000**
Pipe Line Transportation	**807,084,000**
Water Transportation	**402,330,000**
Air Transportation (common carrier)	**416,699,000**
Other Nonmanufacturing	**708,995,000**

Estimated value in place, March 31, 1955.

AEC Offers New Rules

Atomic Energy Commission is giving industry 30 days to comment on a set of proposed new rules of practice to apply to business in proceedings before AEC.

New rules, to affect business applying for licenses or license renewals, determine when hearings are held, how licenses may be amended, revoked, or suspended.

BUILDING: Rebar Bottleneck Looms

Manufacturers break all production records . . . Still not enough to go around as demand continues to outdistance supply . . . Situation is likely to get worse—By *K. W. Bennett.*

◆ WHILE BUILDERS continued to watch cement supplies warily last week, a tougher shortage in concrete reinforcing bars was building up at an alarming pace.

In the first five months of this year producers of concrete reinforcing bar were pouring out record tonnages. They rolled and shipped 804,656 net tons by the end of May to shatter existing records. Building rate continued to rise, inventories of rebar began to shrink; and the ingot shortage, the real root of most steel demand problems today, continued to tighten.

By the beginning of July major producers of reinforcing bar had already begun to cut monthly shipments to customers by as much as 50 pct. As July progressed, the building tempo became hotter. While the year opened with a spurt in state highway and commercial building, by midyear there was a readily discernible acceleration in lettings for industrial buildings. As of last week, this movement was gaining further strength.

Demand Over Supply

Industry sources estimate that June reinforcing bar shipments advanced 10 pct over the May AISI total, then equalled this advance in July. August tonnages should exceed July by at least 5 pct. The smaller tonnage increase in August over July is not occasioned by any letup in demand, but simply by an inadequate supply for going demand levels.

Current estimates among users suggest that inventories are dangerously low. Further reductions in shipments are expected despite a growing backlog of construction work. With inventories already depleted, mill lead times are increasing. The switching by a mill from a 30 day cycle to a 60 day bar rolling cycle, for instance, has the effect of halving the tonnage of any one bar size shipped in a single month, and steel producers are reporting that a 60 day cycle is becoming the order of the day with carryover still advancing.

Outlook Grim

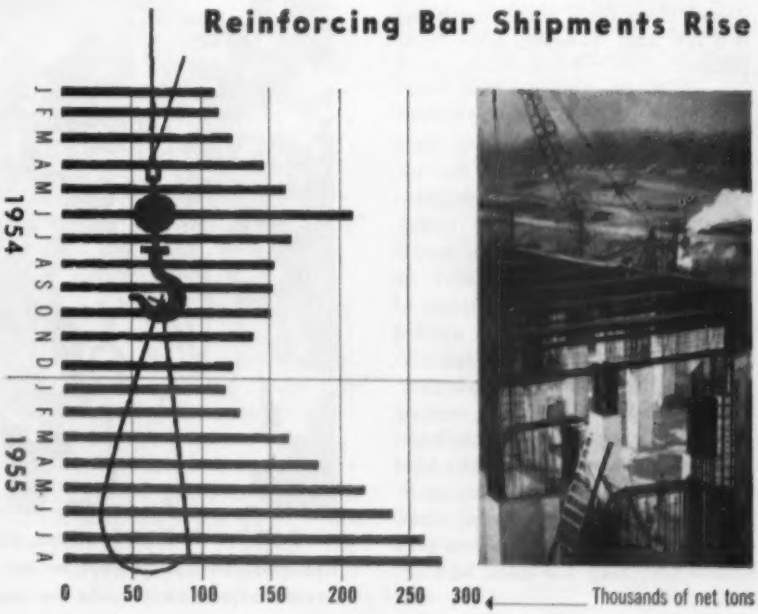
Outlook for fourth quarter is a continued sinking in tonnages shipped to individual customers, as well as further depletion of consumer inventories. Speculation on first quarter 1956 deliveries is confined pretty much to whether the mills will have a 30 day carryover on reinforcing bar or a 60 day carryover.

An initial letting of $500 million in federal highway grants in the first six months of calendar 1956 is expected to precede lettings under the proposed highway program, which would not begin until July and would be only a relative trickle even then.

Reinforcing bar fabricated from reroller rail stock is proving no antedote for the growing deficit. About 10.7 pct of the rebar shipped in 1954 was reroller stock. This figure rose to 12.3 pct in the first five months of 1955. But reroller rail is sinking in supply. In June, reroller mills began living from inventory as reroller rail intake fell below output. With scrap reroller rail prices still advancing (already as much as $9 over former OPS) and with few major rail replacement programs scheduled for second half, this situation will grow increasingly difficult.

In 1954 the nation's reinforcing bar capacity was rated at 163,206 monthly net tons. Mills have been exceeding that figure since the end of March this year. Ingot steel is short. Rolling space is available but even that is getting tight.

Reinforcing Bar Shipments Rise



GOVERNMENT

CONGRESS: It Gave Ike A Good Deal

President Eisenhower got most of what he wanted . . . But Congress balked on expanding AEC and easing Government competition with business . . . Minimum wage raised . . . Metals stockpiling to continue.

◆ BUSINESS and industry fared moderately well at the hands of this year's Democrat-controlled Congress, a legislative checklist prepared by THE IRON AGE shows. The majority of President Eisenhower's requests won approval. No new controls over production, distribution, or prices were voted into law, but neither were existing controls dropped—or even relaxed.

Democrats seeking to generate some political smoke gave the hotfoot to dozens of dollar-a-year men, but took no serious steps to bar them from Washington. In the privacy of cloakrooms, they agreed they'd rather have "businessmen in government" as a campaign issue in 1956.

"Moderation" was the keynote, as it usually is in off-year (nonelection) sessions of Congress. Leaders of both parties maintained a gentlemanly truce and quietly went about laying the foundations for a walloping presidential and congressional campaign.

Government Spending Unchanged

As a result of this year's legislative session, spending for defense is to continue at just about the rate Mr. Eisenhower asked. Manpower strength of the Army, Navy, and Air Force will be higher than requested. Buying of weapons, particularly of guided missiles and advanced-design aircraft, will nudge a little higher. The estimated $10 million cost of checking up on the earth from outer space drew plenty of Capitol comment, but no votes this year.

Specifically, here's what Congress did—and didn't do—on programs affecting business and industry:

GOV'T SPENDING: Congress voted about $53 billion—about the same as last year—but nearly $1.5 billion less than the White House asked. Biggest cut is in foreign aid. Spending for defense, for atomic energy, for major domestic projects goes on at approximately the same rate. Budget still off balance by nearly $4 billion.

MILITARY BUYING: White House request for defense money is trimmed by $350 million—from $32.2 billion to $31.8 billion. But Congress gave its full approval to Ike's follow-up request for an extra $356 million to step up production of B-52 bombers.

AIR BUILDUP: Defense Secretary Wilson's emphasis on air power is still winning converts in Congress. Contracts for about 2300 aircraft will be let. The Army, Navy, and Air Force will spend nearly 2/3 of a billion dollars on guided missiles.

MACHINE TOOLS: Defense Dept. is now authorized to spend another $100 million on special-purpose machine tools as part of the program of keeping the nation's industrial base up to date. As in previous years, no "shelf items" (standard tools) will be bought.

VACATION PRELUDE comes with high-flying paper as U.S. House of Representative page boys let out a cheer for summer hiatus. House and Senate adjournment marks the end of first session of 84th Congress.

CONTINUE METALS BUYING: Congress tells the Administration to continue stockpiling manganese, tungsten, chromite, mica, asbestos, beryl, and columbium-tantalum bearing ores. A ceiling of $150 million is now in effect. Another measure to require minimum monthly purchases at minimum prices of lead and zinc was still pending in the Senate Interior Committee at adjournment.

PLAN TAX CUTS: Congress, with the exception of a few specific excise reductions and technical amendments in the tax laws, left the nation's tax structure where it was at the beginning of the year. It voted to extend the 52 pct corporation tax rate for another year and killed by a slim margin a Democrat plan to cut personal income taxes by $20 a person.

GOVERNMENT COMPETITION: Industry, after finally winning its war to get the Defense Department and other agencies to begin a reduction of government competition with business, wound up worse off than when the year started. Congress voted an amendment in the defense money bill requiring congressional approval before any military project in operation more than three years can be eliminated.

BETTER ROADS: Congress painted itself into a legislative corner by rejecting both the White House plan for bond-financed highways and the Democrats' substitute plan boosting user taxes to pay for new and better roads.

AEC Takes A Cut

CUT ATOMIC PROGRAM: President Eisenhower at the beginning of the year outlined an expanded atomic energy program, but came away from the session with several defeats. Most dramatic was Congress' refusal to vote funds for his "atoms for peace" ship.

BOOST SHIPBUILDING: Government's shipbuilding program will continue at least until the $86.4 million Congress voted this year is spent. The lawmakers knocked $16.3 million off what the President requested, and later refused to grant the Administration an additional $60 million for 17 new cargo ships, including 7 roll-on-roll-off trailer vessels.

Wage Minimum Boosted

BY-PASS CONTROLS: Administration blew hot and cold over whether to seek stand-by power to invoke controls over prices, wages and rents, to curb inflation in an emergency, and finally wound up making no move. Congress, not wanting to get into such a politically dangerous area by itself, also did nothing. But there was a more alarming note in the air at adjournment—the President's decision that martial law would be invoked in case of a nuclear attack on this country.

RAISE MINIMUM WAGES: Congress took the first step in what the U. S. Labor Department and the unions call a major revision and extension of the Fair Labor Standards Act. This year, the legislators hiked the minimum wage from 75¢ to $1 an hour, directly raising the wages of 2.1 million workers and causing indirect salary boosts to another 24 million. Next year, the plan is to broaden coverage to include retail and service workers.

BLOCK SOCIAL SECURITY EXPANSION: An ambitious plan to raise social security taxes, lower some retirement ages, increase children's benefits, and bring self-employed professional workers into the mandatory pension system passed the House but got stuck in the Senate Finance Committee. While some compromise on the original proposal is pretty certain, there is a betting chance that Congress won't overlook the opportunity in an election year to "improve" the pension system.

GOVERNMENT

Business Legislation Box Score

What Ike Asked for:	What Congress Did: YES	NO
Cut GOV'T SPENDING	X	
Cut Total MILITARY BUYING	X	
Strengthen AIR BUILDUP	X	
Keep MACHINE TOOL PROGRAM	X	
Buy More METALS, MINERALS	X	
Trim FAST AMORTIZATION		X
Cut TAXES (Corporation, Individual & Excise)		X
Stop GOV'T COMPETITION WITH BUSINESS		X
Finance Better ROADS		X
Offer ATOMIC ENERGY to Industry	X	
Boost SHIPBUILDING		X
Curb INFLATION		X
Raise MINIMUM WAGES	X	
Spread SOCIAL SECURITY		X
Keep Up FOREIGN AID	X	
Extend RENEGOTIATION	X	
Aid SMALL BUSINESS	X	
Vote CENSUS of Business, Industry & Transportation	X	
Consider SPACE TRAVEL	X	

CONTINUE FOREIGN AID: Congress voted another $2.7 billion in foreign military and economic aid, most of it to go to Asia. It is a reduction of more than $600 million in what the President had asked. Total foreign aid appropriations now are past the $59 billion mark. Many legislators complain that the Administration still has some $8 billion in unspent funds appropriated in earlier years.

Check U. S. Contracts

RENEGOTIATION: Congress reaffirmed the government's authority to take a second look at nearly all government contracts and subcontracts. But so-called standard commercial articles (like shovels) and standard commercial services (like heat treating) are exempt from renegotiation, under the new law.

WAREHOUSES: Finally Admit Boom

Shipments shade below all-time first half high . . . Inventories show slight overall drop . . . Detroit has biggest increase of 50 pct . . . Profit margin slim.

◆ STEEL WAREHOUSEMEN are now willing to admit that business is good. They couldn't deny it if they wanted to. Preliminary figures compiled by American Steel Warehouse Assn. show that shipments for first half '55 are just a shade off the all-time first half peak of 1953.

And the outlook for second half is even better. The warehouses are having a tough time trying to keep their customers happy. They're also waiting in line to get needed shipments from the mills. Business is almost too good. Inventories are getting out of balance.

As expected, sheet and strip are setting the pace. First half shipments are 75 pct over last year. Total shipments jumped 35 pct over 1954, and 10 pct over the 1947-49 base period. June tonnage was heavier than May which in turn was better than April. May tonnage this year was at least 50 pct over the same month a year ago for the widest spread of the year.

Although inventory figures look good overall, many have "holes" in their racks in sheet, strip, and plate and popular sizes of other products. While tonnage going through warehouses is greater than last year, the warehouse share of total steel output is slightly less due to greater mass manufacturing consumption.

All Areas Up

Geographically the Detroit area made the biggest comeback in the first half with 50 pct over 1954 and Pittsburgh was second at 45 pct. Northern Ohio, the central states and mid-continent area were lumped at about a 30 pct average. Texas, the West and South showed lesser percentage increases because drop-off last year was not as bad as other areas. Territories showing the least comeback were New York and New England at 15 pct and Buffalo at 20 pct.

Warehouse inventories are still in moderately good shape, according to Robert G. Welch, association executive secretary. Mr. Welch said they average about 3 to 4 months overall but there are wide variations in products. Geographically New York and Buffalo have the highest as a counterpart to relatively sluggish business. Northern California and the Pacific Northwest have their usually higher stocks because of distance from eastern sources.

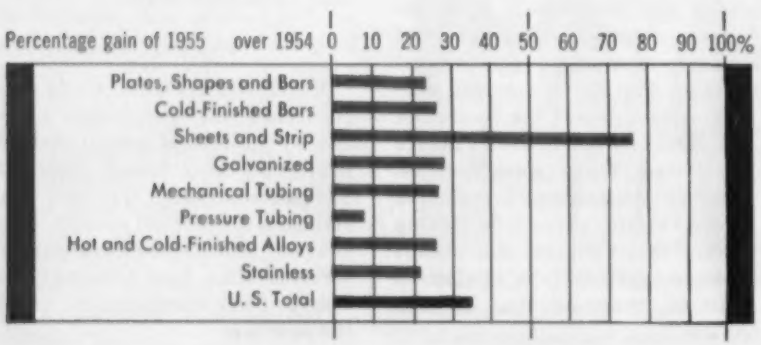
Slim Margin

With sheet and strip moving as fast as it arrives from mills, inventories are lightest of all for this product at 3 months average. Plates, shapes and bars are only slightly better at 3½ months average compared with 7 to 8 months during 1954. Galvanized sheets are only slightly better at 3½ to 4 months average after a substantial 25 pct increase in shipments over last year.

Pressure tubing stocks average out to 5 months inventory and warehouse tonnage showed substantially lower shipments than the '47-49 base period although the first half this year is 40 pct over last. Mechanical tubing stocks average six months and sales are up 25 pct. Hot rolled and cold finished alloy bar inventories are 6½ to 7 months, with a 25 pct increase in business for the first half. High tensile steels and tool steels showed no great business increase and have bulging inventories. Stainless inventories are down to 4½ months and shipments are up 20 pct over last year.

One fly in the ointment which is being largely overlooked, according to Mr. Welch, is the slim profit margins shown for last year. Eighty-four pct of reporting steel warehouses in a recent survey made under 4 pct profit after taxes and only a slightly higher return on net worth. Nineteen pct showed losses.

Shipments Climb



Radioactive Battery

Results obtained when a radioactive battery was put through its paces by an Army laboratory team are outlined in a new research report published by the Office of Technical Services, U. S. Commerce Dept.

CED: What Does It Do For You?

The Committee for Economic Development tackles the big dollar headaches facing the nation . . . CED policy statements are timely, easily read . . . Give facts you should know—*By D. G. Picinich.*

• A WATCHDOG of the public purse, the privately sponsored Committee for Economic Development is currently setting up a new set of policy recommendations keyed to stimulate the thinking of metalworking executives and thousands of other industry leaders.

Listed on CED's 1955 workpad: a close scrutiny of the problems involved in improving the nation's highways; a survey of the prospects, of our economic growth; and a current evaluation of the government's fiscal policy.

Born amid the busy, full-employment World War II era, CED's first big job was promoting an orderly transfer from wartime boom to high peacetime economy. The Committee's optimistic forecast that business could cope successfully with expected post-war recession problems—later proved correct—won for it a place of respect throughout the business community.

Has 3-Part Formula

CED's prescription for remedy of the big money headaches bothering industry and the general public is a 3-part formula: (1) determine the facts underlying the problem, (2) bring the best thinking of businessmen and scholars to bear on the basic issues, (3) offer policy recommendations directed to the public interest.

Major policy statements issued by CED within the past year highlight such timely topics as: "Defense Against Recession," "Taxes, National Security and Economic Growth," "Managing the Federal Debt," "U. S. Tariff Policy," and "Control of Federal Government Expenditures."

Through the voluntary efforts of industry leaders—including those in metalworking—Committee activities and plans are made known to their industry members. Among the CED finance chairmen are leaders in the foundry, metal container, steel, and non-ferrous industries.

While its own operating needs are met largely by business and industry contributions — $888,859 was contributed to the Committee last year by 2142 concerns—CED investigations and subsequent policy recommendations deal with millions in public funds.

"Control of Federal Government Expenditures," issued early this year, pinpoints in easily understood language, the rapid rise in Federal spending to some $72 billion in fiscal '54.

The report points out that this level of expenditure is something new in our experience. In 1939, it reveals, government absorbed about 5 pct of the nation's goods and services—compared with about 16 pct today.

"... Then one day the boss called on me, as an efficiency expert, to evaluate my own job."

Thumbnail Rundown on CED:

- **It's been calling the shots on long-range economic programming which affects us all for the past 13 years.**
- **Its accurate forecast on post World War II production and employment won the respect of business.**
- **Today, its policy recommendations cover many timely economic questions. They're readable, contain facts you should know.**

Further, it points to the enormous rise in national security spending which, in fiscal '55, will account for over 60 pct of government cash payments to the public.

What Price Research?

Who really knows, it asks, whether $20 million spent on metallurgical research, for example, would pay off twice what a $10 million program would? Such specifics, it's noted, are largely beyond the realm of all but experts, and even their understanding of some phases of such a project is fragmentary.

Through its information and education program, the Committee is reaching "grass roots" levels of large segments of national and international public opinion. Here at home, its policy recommendations are available to public schools, libraries and universities. Overseas, foreign businessmen have come to study CED reports closely at U. S. Information Service centers around the globe.

J&L Cold Heading Wire
will help you get highest quality finished parts at increased production rates and lowest manufacturing costs.
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J&L Cold Heading Wire is tops in quality —competitive in price.
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VALVES: Demand and Standards Jump

Power mower, automaking booms push sales of engine valves to record heights . . . Horsepower race demands new heat resistance and strength in valves . . . Use more austenitic steels—By T. M. Rohan.

◆ RECORD BREAKING automotive production plus a phenomenal increase in fagged-out husbands whose wives will let them buy power mowers is pushing output of high alloy engine valves to new peaks.

In this highly competitive business, the leading U. S. valve producer, Thompson Products of Cleveland, is currently running over 40 pct ahead of last year and reaching the highest production rates in its history.

Because of the greatly increased volume, the valve division this week is moving into new separate quarters in a plant of almost 500,000 sq. ft. area in Cleveland. Plant was acquired earlier this year from White Motor Co. for $3 million. Thompson is pouring another $2.5 million into expansion and improvements and the plant will have the stature of an entirely autonomous operation.

Raise Standards

The entire changeover involves well over 1000 machines, including extrusion presses, shapers, lathes, annealing furnaces and elaborate grinding and polishing setups.

Major problems in the current boom in auto valve production are meeting increasing quality requirements and keeping costs competitive. Valves must stand up under increased compressions and hotter operating temperatures in the auto horsepower race. Meanwhile prices must be kept in line with hot competition where a tenth of a cent means making or losing a sale.

Under newer high compression conditions, the exhaust valve of a few years ago now barely qualifies for the lower requirements of intake valves. Entirely new specialty alloys must be developed for increased exhaust valve temperatures.

These new alloy steels are not developed overnight. Thompson has worked as long as 7 years with stainless producers to develop materials now coming onto the market.

Serve Hot Rods

With higher compression ratios, some valves must now stand up under 1500F localized temperatures. Some automakers, of course, are "souping up" basic auto block designs to stay in the horsepower race. The critical design point then boils down to how much the valves and other engine components will take.

Major problems in working out the steel specifications for valves are resistance to burning or erosion, extrudability and forgability for processing, ability to hold shape under heat, tension and resistance to attack by lead from ethyl gasoline.

Use of austenitic steels for this is on a rapid increase due to their greater hot strength and resistance to burning. The ferritic steels formerly used for exhaust valves now are finding their way into intake valve applications along with Types 3140, 8645 and 8440.

TODAY'S VALVES must take 1500°F temperatures in souped-up engines.

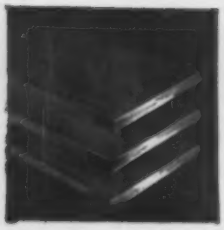
Consumption of steel mill products at Thompson's main Cleveland plant alone is in excess of 25,000 tons per year with the largest portion going into high alloy valves.

Small Engines Help

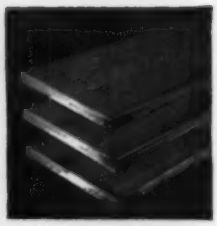
Those tired husbands are also giving the valve and small engine business a shot in the arm. Centered principally in the Wisconsin-Michigan area, the small engine manufacturers have shown huge increases in output.

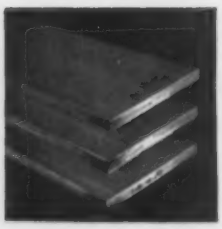
The bulk of the smaller engines are single cylinder and therefore use only two valves per engine compared to up to 32 on double-overhead V-8 auto engines being developed. But some of the small engine manufacturers are turning out more total units than leading makes of automobiles.

"Say when."



"an infinite capacity for taking pains"





That's a well known definition of "genius." We at Claymont don't claim to be geniuses. But we are proud of the fact that "taking pains" is an essential part of our working policy in the making of carbon and alloy steel plates.

Because of our close-knit organization, every order for plates—large or small—receives careful, personalized supervision . . . painstaking attention to every detail.

Claymont salesmen, engineers, metallurgists, laboratory analysts and skilled workmen form a coordinated group, teamed up to turn out plates that are exactly suited to your individual fabricating needs.

To order, contact our nearest sales office or write direct to Claymont Steel Products, Wickwire Spencer Steel Division of CF&I, 813 West Street, Wilmington 99, Delaware.

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2763

PRESS: Biggest Goes to Work

Lombard unit biggest in physical dimensions . . . Goes to California to join Air Force heavy press program . . . Needs delicate handling in special freight cars.

◆ A GIANT extrusion press, largest in physical dimensions ever to be built in the U. S., is on its way to service in the Air Force heavy press program.

Built by Lombard Engineering, it will go into operation at the Harvey Machine Co., Torrance, Calif.

There are other extrusion presses in the Air Force program which equal or surpass the tonnage capacity of the Lombard unit. Another 12,000-ton press built by Loewy is being placed in operation at Curtiss-Wright in Buffalo, but it is smaller in overall physical dimensions. A press of 14,000-ton capacity was designed in Germany by Schloemann.

The Lombard 12,000-ton press handles a billet about 6 ft in length and 3 in. in diameter and can extrude any shape which can be circumscribed in a 32-in. circle.

Shipping Problem

A 1500-ton plate and shape stretcher and de-twister will be used in conjunction with the press. It has an overall length of about 175 ft and is 106 ft between jaws. It is of cantilever design without supporting side or top members. Operations at Torrance are expected to begin early in 1956.

Other units in the heavy press program are already in operation and the program should be moving at full tilt in 1956. In addition to Lombard, Loewy and Schloemann, Mesta, Bliss, United and Baldwin-Lima-Hamilton have also contributed to the design of presses in the Air Force program.

The press is being shipped to the West Coast in sections on specially built and modified railroad carriers via carefully selected routes under painstaking speeds and regulations.

LARGEST EXTRUSION PRESS, in physical dimensions, ever built in the U.S. has 12,000 ton capacity. It will be used in Air Force heavy press program.

Procurement:

Urge more defense contracts for small business.

Top Defense Dept. officials are setting policies that will give small firms a better break on government procurement, but somebody's got to make sure the directives are observed.

Senate Small Business Committee lamenting continuing decline in the share of Pentagon orders going to small firms, urges top officials to "roll up their sleeves" to make sure underlings doing the buying follow directives from upstairs.

To further aid small business, the committee urges the armed services adopt the "element of subcontracting" as a criteria in determining award of negotiated contracts, and that the services conduct more purchasing on an advertised bid basis.

The committee finds that small firms have been receiving less government business in terms of prime contract dollars generally, and also that the percentage of contract awards considered within the area of small business is declining.

Only 3.3 pct of contracts with a face value of more than $28 billion are held by small firms. It asserts that small firms shouldn't be denied contracts because they need progress payments.

EXPANSION IN INDUSTRY

Adds Plant:

GM to erect new stamping site near Marion, Indiana.

General Motors Corp.'s second new Fisher Body stamping plant—part of GM's recently announced half billion dollar capital expenditure program—will be built near Marion, Ind.

Plans for construction of the proposed 1,776,000 sq ft Indiana facility follow closely the recent GM announcement of a comparable size installation at Mansfield, Ohio. Corporation plans also call for the addition of some 970,000 sq ft of new construction to seven existing assembly plants.

With addition of the two new stamping plants, Fisher Body will operate 35 plants in 21 cities in 11 states. The division also supplies seven additional GM assembly plants in the U. S. and 22 foreign plants.

The new program brings to $2 billion the total GM expansion program announced by the Corporation since January, 1954.

Plan New Facilities

Texas Eastern Transmission Corp., Shreveport, La., and Texas Eastern Penn-Jersey Transmission Corp. have received Federal Power Commission authorization to shift 10,000 hp currently installed or authorized for construction on Texas Eastern system to the Penn-Jersey system.

FPC permission has also been granted for construction of additional hp on the Texas Eastern system and two small loop lines in the Philadelphia area.

Cost of the project is estimated at $2.5 million for Texas Eastern and $2.8 million for Penn-Jersey. The program is slated for completion by the end of the year.

The project includes shifting hp presently installed or authorized for construction at Texas Eastern's Phoenixville, Chambersburg, and Wind Ridge, Pa. stations to the Penn-Jersey system; construction of 3300 additional reciprocating hp at Texas Eastern's Linden, N. J.. station. and construction of approximately 11 mi of pipeline loops in the Philadelphia area.

Boost Holdings

Assets of Pressed Metals of America, Inc., Port Huron, Mich., have been purchased at a price of over $7 million by Frederick W. Richmond, New York industrialist, in conjunction with businessmen from several major cities. The move is subject to company stockholders' approval.

The firm, a major manufacturer and distributor of automotive suspension parts, reportedly has grossed on a 5-year average $13 million in sales annually since 1950. Average annual earnings, after taxes, amount to more than $675,000.

The 36-year-old firm employs over 500 workers in plants in Port Huron, Marysville and Detroit. Acorn Products Corp., a wholly-owned subsidiary, is included in the assets.

Reactor:

Major industrial firms plan nuclear reactor for N. Y. area.

Eight leading industrial firms plan to build and operate in the New York area the first nuclear reactor to be owned and operated by private industry. The facility will be used for research in industrial and humanitarian fields.

AMF Atomics, Inc., subsidiary of American Machine & Foundry Co., will build the installation. Companies participating in formulation of project plans include the American Tobacco Co., Continental Can Co., Corning Glass Works, International Nickel Co., Chas. Pfizer & Co., Socony Mobil Oil Co., Inc., and U. S. Rubber Co. Other firms are expected to announce their participation shortly.

Year to Build

Cost of the proposed Industrial Reactor Laboratories is estimated at between $1.5-$2 million. It will be located on a 250-acre tract within commuting distance of New York. Options have already been taken on two sites in N. J. and N. Y. within 50 miles of the city.

Construction of the facility is scheduled to begin in early fall, and it is expected to be ready for use a year later. Final selection of the site is subject to clearance by the Atomic Energy Commission from which the reactor's fissionable fuel will be obtained on a lease basis.

In addition to providing large-scale amounts of neutrons and gamma rays, the reactor will also be a source of radio-isotopes. These are already bringing about great advances in science and industry.

Titanium:

U. S., British producers set facility plan before Govt.

Columbia - Southern Chemical Corp., Pittsburgh, and Imperial Chemical Industries, Ltd., London, have applied to the Federal government for a contract under which the Govt. would purchase for a 5-year period 5000 short tons per year of granular titanium metal.

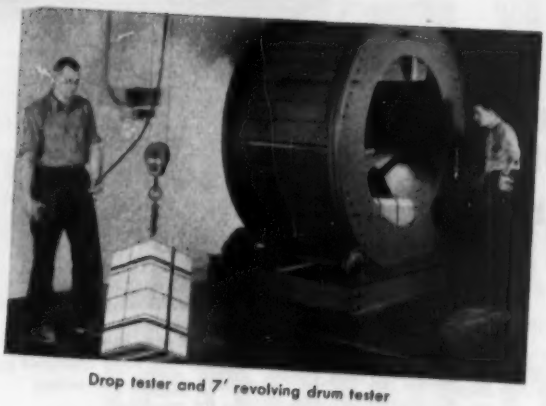
In their application, the companies have stated that they have completed arrangements for introduction into the U. S. of a granular titanium process not at present employed here. They would also make available to fabricators techniques not at present known or used in the U. S.

If contract approval is received, the two firms will form a jointly-owned subsidiary for producing titanium metal by the British company's sodium reduction process.

The parent companies will each hold a 50 pct interest in the new organization to be known as Columbia Titanium Co. New production facilities would be built at Natrium, W. Va.

Incline impact tester

14′ revolving drum tester



Drop tester and 7′ revolving drum tester

Designing a wirebound container

Vibration tester

General Box behavior clinic for shipping containers

When General Box designs and tests a container for your product, there's little room left for guesswork about its behavior. Some of the reasons are illustrated above. How it will handle in your plant, how it will pack, how it will ship, and how it will arrive and unpack are all considered.

General Box design engineers know the importance to you of every possible saving in packing, shipping, and direct container costs. And every month they design containers for all kinds of things—machine tools that weigh several tons . . . "hard to pack" products like radar antenna . . . major appliances . . . component parts in bulk.

Whether you believe the best container for your product will be a toughie or a snap to design, it will pay you to find out what the General Box answer is. It's easy to do—just let us send a man. No obligation. Write for your copy of the "Heavy Duty" issue of "General Box."

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

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time studies prove it!

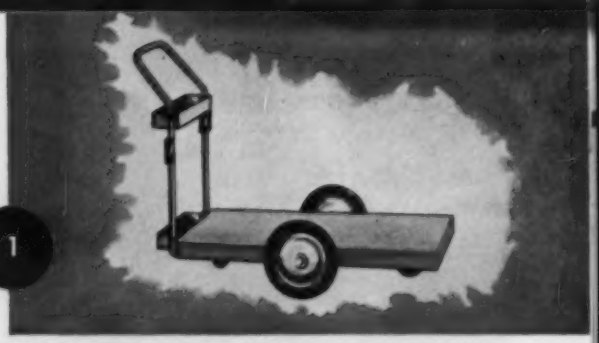
mobile power lubrication can slash costs...up profits... boost production!

Alemite cuts costs!

this "lubrication department on wheels" is tailored to fit the needs of your plant...exactly!

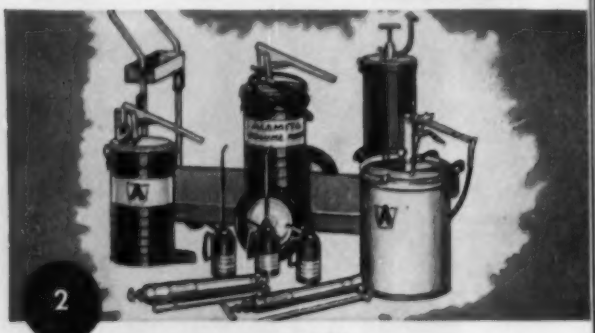
If your plant needs a wide variety of lubricants "all over the lot," an Alemite Lubrikart can save you plenty. It's actually a "lubrication department on wheels," provides all the advantages of power lubrication—proven by actual time studies to be 63% faster than hand methods!

Lubrikarts carry hand guns, electric or air operated power guns for pressure gun greases, loader pumps, gear oil dispensers, oil can fillers, as well as extra parts, tools, other maintenance needs. The savings in down-time are amazing—and even more important, you get more consistent, *better* lubrication—all along your lines of production.



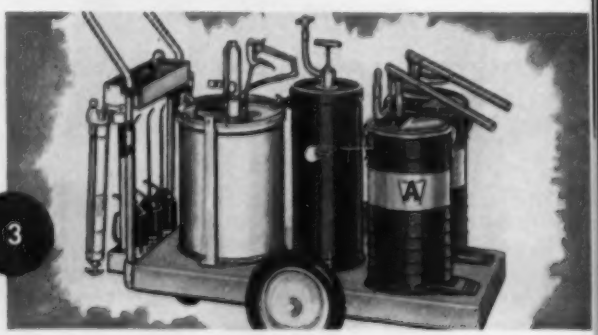
1

Mobile power lubrication begins with this sturdy hand truck, the Lubrikart. Highly maneuverable, it goes anywhere in the plant, navigates a 26" aisle, turns in a 49" circle.



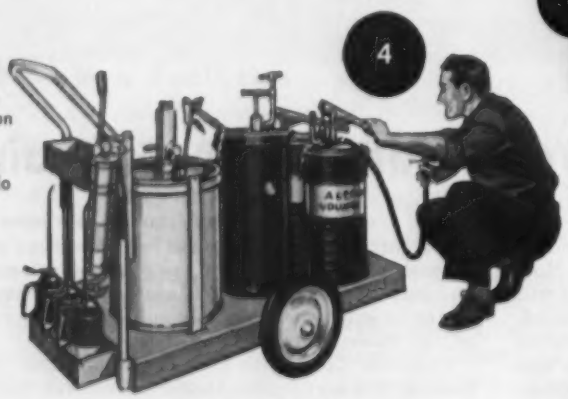
2

From standard Alemite equipment you choose the exact items your plant needs. Air, electric or hand operated pumps handle *any* lubricant needed. And Lubrikart brings necessary equipment right to the machine!



3

Now the Lubrikart, filled at the plant oil room, is ready to service a variety of machines requiring different types of lubricants. Lubricant is completely protected at all times—reaches bearings "refinery clean"!



4

Operator has a complete selection of equipment, plus spare parts, fittings, etc., to do a complete job —"on-the-job."

This is Alemite Plan "E" —
Lubricant stays "refinery clean" barrel to bearing!

This planned assembly and use of Alemite Lubrikarts is known as Alemite Plan "E". It is one of the five Alemite plans that your trained Alemite representative can show you. Ask him about the colorful, new informative slide film, "No Margin for Error" which will help you and your men cut production costs. No obligation.

FREE! **New Booklet: "5 Plans for Better Plant Lubrication"**

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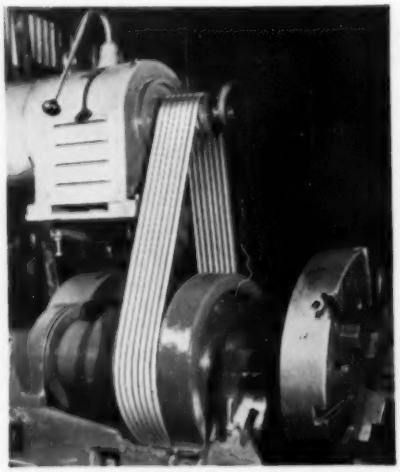
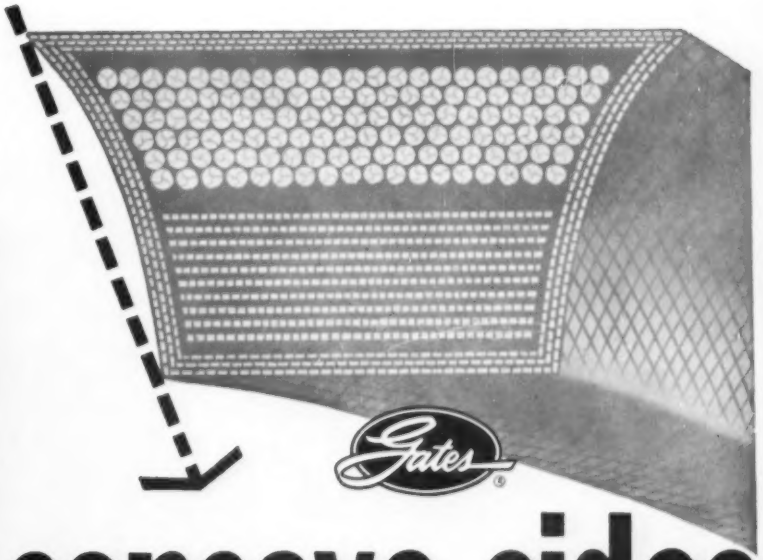
A PRODUCT OF SW STEWART-WARNER

Ask Anyone in Industry

This large lathe was formerly driven by a flat belt which slipped on heavy cuts, stalled and broke tool bits. Savings on broken tool bits alone offset the cost of the drive the first year—and production was increased 25% after the V-belt drive was installed.





concave sides lengthen V-belt life ...cut costs

Hundreds of plants that keep track of V-belt drive costs know this: Gates Vulco Ropes . . . the V-belts with *concave sides*...wear much longer and *cost less per year of service.*

Here is the interesting reason why:

When a Gates V-belt bends around the sheave, the *precisely-engineered* concave sides (Fig. 1) fill out and become straight. Thus the sides of the belt make full, uniform contact with the pulley (Fig 1-A).

Naturally, uniform contact distributes the wear *evenly.* And *even* wear means *longer* wear.

Longer wear saves not only on replacement costs; it also saves the cost of down-time... keeps equipment producing.

Simple test proves value of concave sides

Take a straight-sided V-belt (Fig. 2) and bend it. Feel the sidewalls of the belt bulge out as the belt bends. You see immediately that the bulging sides prevent uniform contact with the pulley (Fig. 2-A). Uneven contact causes faster wear...increases your drive replacement costs.

Let the cost-saving longer life of Gates Vulco Ropes contribute to *your* profits. Specify Gates Vulco Ropes—the V-belts with concave sides (U.S. Patent 1813698). The Gates Rubber Co., Denver, Colorado—*World's Largest Maker of V-belts.*

Gates Engineering Offices and Distributor Stocks are located in all industrial centers of the United States and Canada, and in 70 other countries throughout the world.

TPA-54A

GATES VULCO ROPE DRIVES

WEAN EQUIPMENT CORPORATION

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CLEVELAND-17-OHIO

REPLY TO
22800 LAKELAND BLVD
CLEVELAND 17, OHIO

WARREN OFFICE
347 N. PARK AVENUE
WARREN, OHIO

A letter of interest to Every Press User!

Dear Sir:

During the last year our company has developed a new press of revolutionary design.

We have conducted a series of tests on this machine which has been witnessed by a large group of press experts.

The net impression of these people seems to indicate that our development may preface sweeping changes in the whole field of metal stamping.

It was our original intention to restrict the application of this press to certain specialized industrial fields, but it is now apparent that it has the broadest possible application and the pressure to release general information regarding its performance has been overwhelming.

We, therefore, use this open letter as an invitation to authorized personnel to see this machine in operation.

If you will express your desire in letter form on company stationery, it will receive our prompt attention.

Very truly yours,

WEAN EQUIPMENT CORPORATION

R. J. Wean, Jr.

R. J. Wean, Jr.
President

Wean

FLYING PRESS

Designed primarily for speed of operation, the Wean Flying Press is the first machine of its kind to successfully combine the fast operating advantages of continuously fed strip with dies which move with the strip.

The press differs greatly from conventional machines. Machine tool-like in appearance, it has a minimum of vibration and requires no foundation. In addition to its great speed, it incorporates several new design principles that should interest every press user.

An automatic adjustment of feed length while press is in motion, and the absence of a clutch and brake (the most frequent points of maintenance on conventional presses), are two examples of this advanced engineering.

Wean 60-ton Flying Press stamping out automotive hinge plates at 600 pieces-per-minute, using the same die set which on a conventional press made the parts at a rate of but 90 pieces-per-minute.

Wean EQUIPMENT CORPORATION Cleveland, Ohio

Chicago Newark, N. J. Detroit

This Case of "Unprovoked Assault" Cost

*$2,010 in compensation alone — that's what it cost a southern machinery manufacturer when a turret lathe operator was struck in the left eye by a flying chip. A surgeon had to remove the eye. Apart from the humanitarian aspects, the pity of it all is that an AO† metal side shield spectacle goggle, for instance, costing at an average of about $2.30 would have prevented this accident. Even if this company had protected the eyes of the entire department (Cost: under $150) they would now be ahead by more than $1,860!

AO trademarked safety lenses are heat treated and individually tested to prevent accidents like this. The AO trademark on frames is another guarantee of quality eye protection. Ask an AO Safety Representative to show you where the eye hazards are in your operations . . . what can be done to meet them . . . and how little quality protection costs. (It can pay for itself within 6 months time.) Or write American Optical Company, 578 Vision Park, Southbridge, Mass., for booklet.

American Optical
SAFETY PRODUCTS DIVISION
SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL CITIES

†T.M. Reg. by American Optical Company

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Report To Management

Applying the Brakes

Tendency to slow down the economy from its record setting pace appears to be gaining. It can be found in Washington and Wall Street, among political conservatives and economic planners.

It takes the form of tighter credit terms and higher cost of borrowing. This makes it more difficult for you as a consumer to buy on the installment plan. It makes it more costly for your business to raise money for expansion or to finance current operations.

Higher cost of borrowing is attributable not only to intentional slowdown. For the most part, the current boom itself is responsible for higher interest rates.

There just isn't enough in the way of lendable funds to finance all the plans of expansion that eager businesses have drawn up. The natural economic law of supply and demand rather than economic planning prevails in the increasing cost of financing.

Momentum is Great

These brakes aren't going to halt what appears to be the best and most healthy boom in history. Momentum is too great to be throttled by such curbs as curtailing VA mortgages from 30 to 25 years and upping down payment requirements for both FHA and VA home buying.

Business outlook is unchanged for most segments of the economy. The basis for most of boom is as sound as possible and even the so-called danger points such as installment buying aren't as dangerous at second glance as they appear from just looking at the figures.

Installment credit alone doesn't have much meaning unless weighed against the whole economy. Buying on time, even at the record installment debt of $24.9 billion, isn't dangerous unless repossessions mount, which they show no indication of doing.

Where's the Money Coming From?

There's no reason to doubt the soundness of an industrial and business upsurge based on consumer demand backed up by ability to pay. Most of the installment buying is based on sound confidence, not speculation.

Personal income continues to climb and disposable income, even more important, is also at a record level and going higher. With this in mind, consumers will be able to buy on shorter terms, pay somewhat higher down payments.

Pessimists continue to warn of a probable seasonal lag in auto buying and home construction. Facts just don't bear this out. Furthermore, capital expenditures are on the increase and could more than take up any slack in late summer or autumn.

With purchasers waiting in line for most raw materials and semi-finished products, there is little possibility of anything but a strong 1956. Don't misread the signposts and don't get misdirected by uninformed advice.

Make Your Scrap Pay

A look around your plant at your scrap and old or obsolete equipment that is destined to become scrap can be profitable. The scrap market is high, both for iron and steel and most nonferrous materials.

Now is the time to form a plant scrap committee to take an inventory of what is already in the scrap pile or what should be scrapped. It's a good time to clean up your plant area when the job possibly could pay for itself.

INDUSTRIAL BRIEFS

New Extrusion Presses . . . Two 8000-ton extrusion presses slated for installation at the Kaiser heavy press plant at Halethorpe, Md., are nearing completion. Initial operation is set for September.

Reduce Noise and Vibration . . . American Standard Method for Specifying the Characteristics of Analyzers Used for the Analysis of Sound and Vibrations, Z24.15-1955 is a new standard for analyzers not restricted to octave bands. Complete information can be obtained on this method by contacting American Standards Association, 70 E. 45th St., New York 17, N. Y.

New Detroit Distributor . . . The Boyer-Campbell Co., Detroit, has been appointed industrial distributor of Firthite tools, tips and blanks, high speed toolholder bits, drill rods, etc., for Firth Sterling Corp. of Pittsburgh.

Talking Elevator . . . An operatorless elevator that "talks," reputed to be the first in the nation, has been installed by Westinghouse in the National Distillers Bldg. in New York City. The heart of the machine is a series of magnetic tape recordings which will advise passengers of proper procedure. Electronic controls insure the fact that messages will be sounded only when hesitation or a wrong move indicates their necessity.

Merger . . . Armorite Corp. and Jet Combustion, Inc., Chicago, have completed their plans for a merger. Block of stock in the new corporation was granted to several employees as the first step in a long range plan to pass ownership of the firm to selected key employees. Present plans include extension of the firm's activities to the field of automation.

New Door . . . A new, self-seating quick-opening door, has been developed by the Patterson-Kelley Co., Inc., East Stroudsburg, Pa., to reduce the time it takes to open heat exchangers, autoclaves, sterilizers, and other pressure vessels. The p-k Lever-Lock Door (patent pending) is locked and unlocked by means of bars. For more information contact the Patterson-Kelley Co., Inc., 10 Lackawanna Ave., East Stroudsburg, Pa.

Mill Products Representative . . . Wilson-Marsh Metal Co., 350 Madison Ave., New York 17, N. Y., has been appointed representative for mill products of Quaker State Metals Co., Lancaster, Pa.

Purchase of Foundry . . . Paul W. Learner, president of the Learner Co., ship salvage and scrap firm, has purchased the 200,000 square ft iron foundry of General Metals Corp., the metalworking subsidiary of Transamerica Corp.

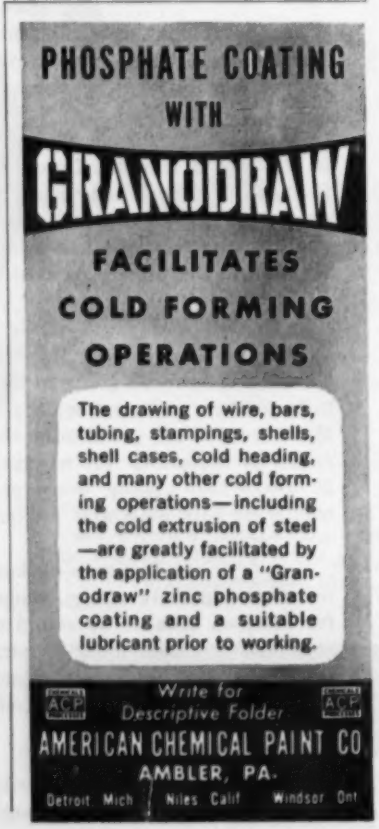
Canadian Agreement . . . Seaporcel Metals Inc., Long Island City, manufacturer of porcelain enamel products, has entered into a licensing agreement with General Steel Wares Ltd., Toronto, whereby the Canadian firm will manufacture and distribute porcelain enamel products for marine, aviation, and architectural use under the Seaporcel name.

Branch Office . . . The Spang-Chalfant Div. of the National Supply Co. opened a district office in the Russ Bldg., San Francisco, to concentrate on West Coast sales of Spang tubular products.

New Name . . . American Wheelabrator & Equipment Corp., Mishawaka, Ind., is now legally the Wheelabrator Corp. This change of name does not affect ownership, management, or operation.

Atomic-Electric Power Plant . . . Pennsylvania Power & Light Co. has informed Admiral Lewis L. Strauss, chairman, AEC, of P. P. & L.'s decision to build a privately financed atomic - electric power plant of at least 150,000 kilowatts utilizing the homogeneous-type reactor, on the basis that such a plant will be commercially competitive with generating stations using conventional fuels. The in-service date for the new unit on the P. P. & L. system is planned for 1962.

Steel Band Strapping . . . "Edge-Grip," is the latest product to be added to the line of steel band strapping and accessories manufactured by Allegheny Steel Band Co., Pittburgh.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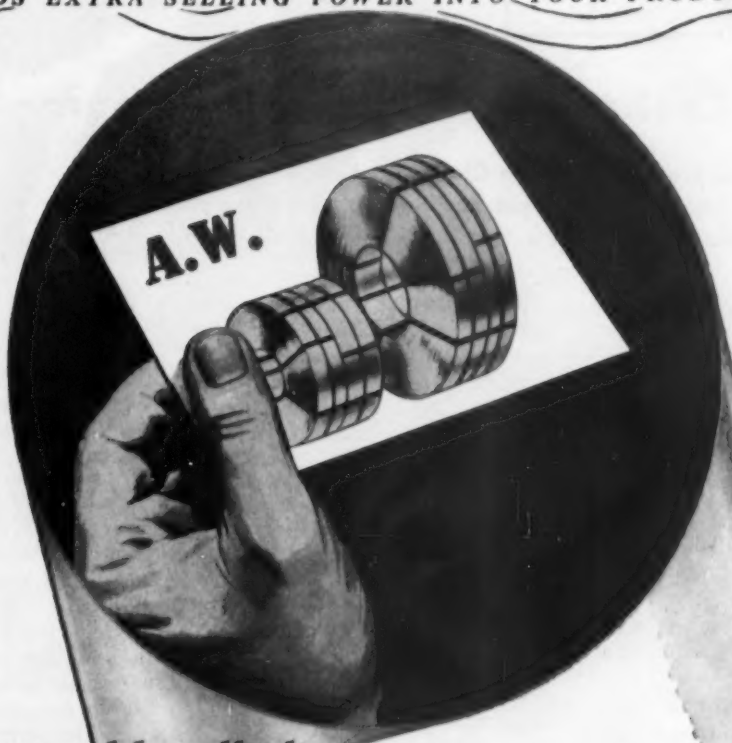
BUILDS EXTRA SELLING POWER INTO YOUR PRODUCTS



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A. W. STRIP STEEL is a salesman ...for your products

Invisible . . . yes—but there, nevertheless . . . adding the superior qualities of strip steel produced precisely to your specifications of temper, finish and uniformity under the most rigid metallurgical control—qualities that help give your product the strength and dependability which build reputation and sales.

If your products require hot or cold rolled strip or sheets . . . call upon the services of an integrated steelmaster with modern, up-to-date continuous mills—where "custom-production" is standard practice. Call upon ALAN WOOD STEEL COMPANY.

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Plates (sheared)
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Cold rolled strip
ROLLED STEEL FLOOR PLATE
A.W. ALGRIP *abrasive*
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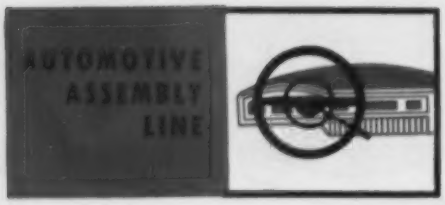


Chrysler Cashes in on Canadian Boom

$50 million expansion program increases Chrysler's share of Canadian market . . . Keeping cars 60 pct Canadian content is one problem of production . . . Dealer stocks are not too high—By *T. L. Carry.*

◆ ECONOMIC GROWTH and development in Canada, which started in 1939, has reached tremendous proportions since the end of World War II.

As a result, markets for consumer goods have also increased and the whole country is taking on a very prosperous air.

Chrysler Corp. of Canada, Ltd., is in the process of imitating its American counterpart, the parent Chrysler Corp. in Detroit, in a bid for a bigger share of the expanding car market.

The Canadian subsidiary is in the process of a $50 million expansion program which the firm hopes will help it regain the one-third of the Canadian car market it used to enjoy.

Before World War II the firm, which produces Chrysler, DeSoto, Dodge and Plymouth cars at its plant in Windsor, Ont., had a daily production capacity of 256 cars. When the war ended, a look into the future showed the Canadian company that it was seriously lacking in manufacturing capacity and unable to meet the demands of an expanding Canadian market.

New Engine Plant . . . Sales steadily declined until last year Chrysler of Canada captured only 15 pct of the market.

To offset the decline it was decided to expand the facilities over a two-year period. The bulk of the $50 million is being spent on a new V-8 engine plant. This addition, which will go into production at the end of August, eliminates the need for importing V-8s from the United States.

Approximately $30 million was spent on the building and equipment, which includes the latest in automatic transfer machines to minimize handling operations.

The assembly plant was doubled in size to permit two-shift operations. The company is currently turning out 480 cars daily there, but the production can be increased in the future to as much as 600 cars a day.

Paid Off . . . One of the features in the expansion is an extensive new paint mixing department. The paint mixing room is completely separated from the assembly plant and over 27 miles of pipe carry paint to the spray booths.

The expansion has paid off handsomely, according to E. C. Row, president and general manager of the Canadian subsidiary.

Chrysler's share of the Canadian market for the first six months of this year was 24 pct. The company sold 65,000 cars in that time, more than half of the total number sold in all of 1954.

Canadian Content . . . Employment at the plant has increased from 6500 to over 10,000 and payrolls this year will exceed $32 million.

Producing cars in Canada has its problems. In order to get some necessary parts from the United States duty free, the firm must maintain what is called Canadian content. That is, the cars must be at least 60 pct Canadian in both material and labor. Principal imports for Chrysler of Canada are body stampings and frames but the firm is able to exceed the minimum 60 pct requirement.

In a look at the future, Mr. Row predicted that Chrysler of Canada will regain its former position in the market. He expects to sell 105,000 cars in 1956.

"Come to the point Wilkins—What is it you wanted to ask me?"

Ford Expands Styling

Ford Motor Co. is continuing to expand its recently established styling office in a bid to set the pace in the industry.

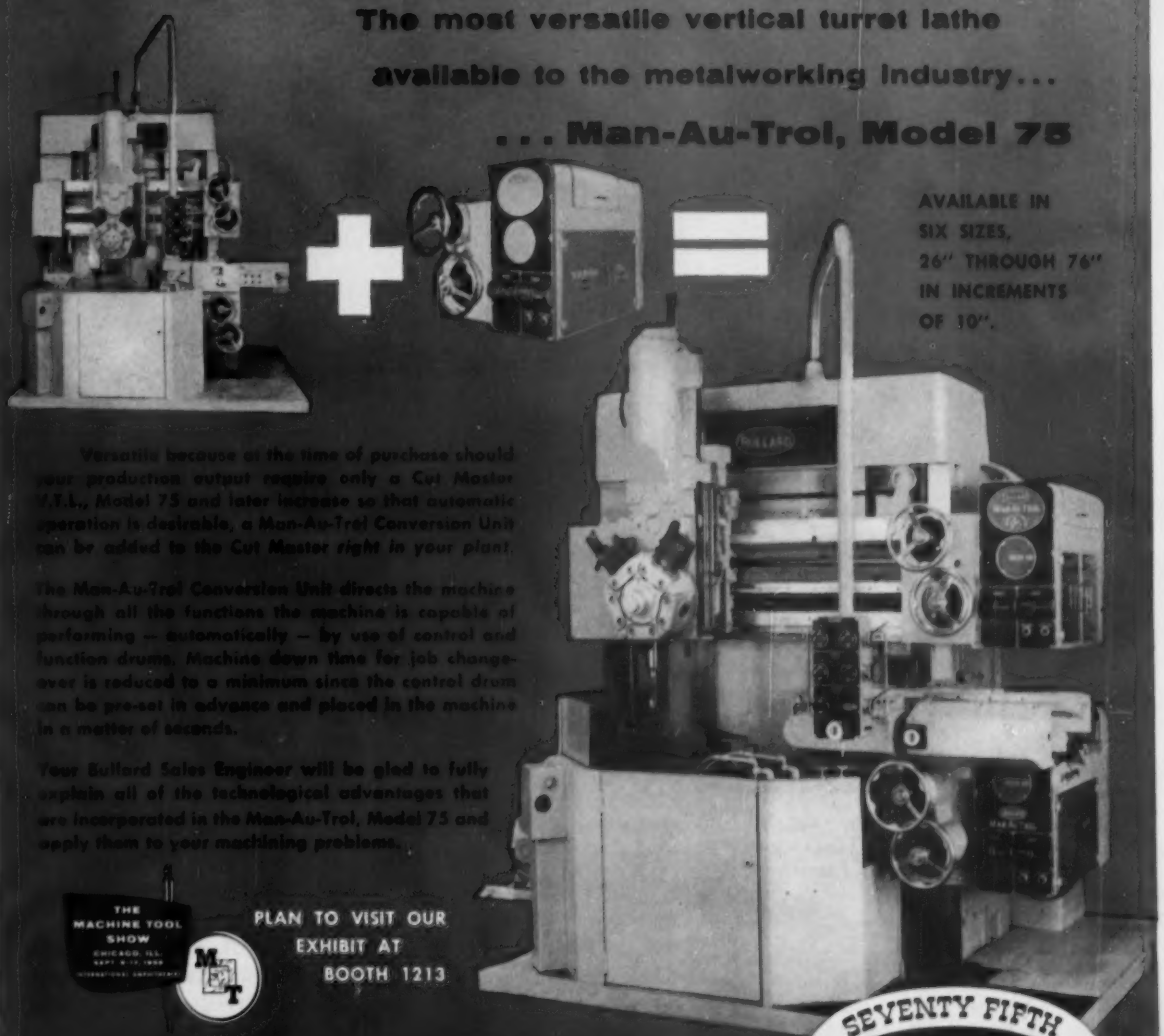
Eight new appointments were recently announced by George W. Walker, vice-president and director of styling.

The new styling office was established last May with the transfer of design operations from the company's engineering staff to the office under Mr. Walker. It was an outgrowth of the divisionalizing of each of Ford's products.

Machine Tools for Today and Tomorrow!

The most versatile vertical turret lathe available to the metalworking industry...

... Man-Au-Trol, Model 75



AVAILABLE IN SIX SIZES, 26" THROUGH 76" IN INCREMENTS OF 10".

Versatile because at the time of purchase should your production output require only a Cut Master M.T.L., Model 75 and later increase so that automatic operation is desirable, a Man-Au-Trol Conversion Unit can be added to the Cut Master *right in your plant.*

The Man-Au-Trol Conversion Unit directs the machine through all the functions the machine is capable of performing — automatically — by use of control and function drums. Machine down time for job change-over is reduced to a minimum since the control drum can be pre-set in advance and placed in the machine in a matter of seconds.

Your Bullard Sales Engineer will be glad to fully explain all of the technological advantages that are incorporated in the Man-Au-Trol, Model 75 and apply them to your machining problems.

THE MACHINE TOOL SHOW

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Leaves steel, zinc, brass, copper, aluminum, magnesium, all common industrial alloys clean, bare, dry—ready for reject-free, economical finishing

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These points of superiority, and several more, make DOW TRICHLOROETHYLENE the *saving buy* for you. Contact your Dow distributor for your solvent requirements. He's the source for your other specialized solvent needs, too . . . stabilized DOW PERCHLOROETHYLENE and CHLOROTHENE*, the wonderful new *cold* degreaser. For detailed information on any one or all three of these superior solvents, just drop a line to THE DOW CHEMICAL COMPANY, Dept. S 670C, Midland, Michigan.

*TRADEMARK

you can depend on DOW SOLVENTS DOW

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Aug. 6, 1955	147,979	24,260*
July 30, 1955	171,465	28,323
Aug. 7, 1954	108,358	15,810
July 31, 1954	110,266	20,257

*Estimated Source: *Ward's Reports*

Inventories:

New car stocks are under control.

A Senate subcommittee's recently expressed concern over what it considers a high number of new cars dealers have in stock was caused by a combination of politics and dealer complaints.

Dealers in the Detroit area and manufacturers were quick to deny the charge. Some went so far as to poke fun at the complaints from Washington, referring to the originators as "The Senate Motor Co."

Dealers here claim that they can't get enough cars to sell and producers say they are having a tough time keeping production schedules up to demand.

Selling Is Tough

Most dealers in Detroit believe that the complaints originated from dealers who find that they are unable to cope with the present highly competitive pace being set in the market.

Selling new cars is no picnic. In some cases, dealers have found it expedient to get out of the car business altogether. Some of these were probably quite bitter about the prospect and thus complained to Washington.

Actually, a stock of 820,000 cars is not unduly high when you consider the number of cars that are being sold this year. At the present pace of sales, the 820,000 units probably amount to slightly over a 30-day supply for the whole industry.

Good Publicity

Then, too, dealers who are complaining must remember that this is not 1946 when a customer practically had to get on his knees to get a new car. It's a buyer's market and the main beneficiary in such a case is the customer.

The automobile business is one of the biggest in the country, and the senators in Washington no doubt saw a good chance to make some headlines by releasing their opinions on new car stocks and the rate of dealer mortalities.

The present situation is far from critical. Auto producers are not going to glut the market, especially now that they are getting ready to introduce their new models. Dealers are going to have to use all their resources to sell the present number of cars on hand and the man who buys an auto right now will find himself picking up a real bargain in any price range.

GM Report Shows Boom

If there are any doubts that the country is in the midst of a king size boom, a quick look at the second quarter financial report by General Motors Corp. should remove them.

Sales and earnings for the first half of 1955 hit new peaks. They were 29 pct higher than they were for the same period in 1954.

GM's net sales for the second quarter of this year totaled $3,412,000,000 compared to $2,656,000,000 for the same period last year. Likewise, sales for the first six months of this year were $6,513,000,000 compared to $5,066,000,000 for the first half of 1954.

It is interesting to note that sales of defense items this year continued to decline for the corporation. Thus, the gains that were realized resulted entirely from increased sales of civilian products.

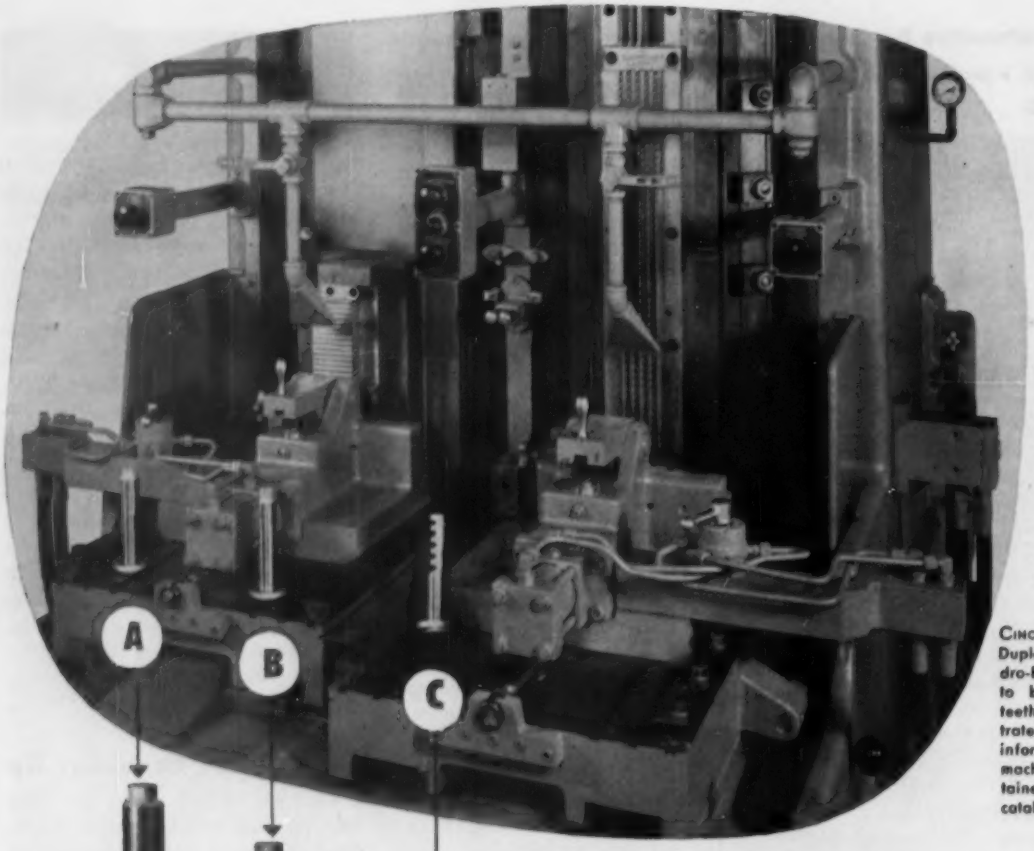
GM attributes the record sales to a number of economic factors. The continuing rise in consumer income and the widespread confidence in the economy has put the public in a buying mood. The automobile industry has been one of the biggest factors in contributing to the healthy aspects of the present boom.

Chrysler Earnings Up

Chrysler Corp. reported first half earnings more than 3½ times what they were in all 12 months of 1954. Actual figures were $70 million versus $18.5 million.

THE BULL OF THE WOODS — By J. R. Williams

OF ALL TH' BONEHEADS! I DON'T KNOW HOW THEY HOLD SUCH BIG JOBS!
TH' LAZIER THEY GET, TH' FOXIER THEY GET! THERE'S NOT A THING WRONG IN THAT DRAWIN' --HE JUST DON'T WANT TO CLIMB THEM STAIRS FOR SOME ADVICE!
IT'S A TRICK, ALL RIGHT-- TH' BULL DON'T WANT TH' HELP UP THERE KNOWIN' HE NEEDS ADVICE, AN' TH' DRAFTIN' BOSS DON'T WANT THE HELP HEARIN' ABOUT HIS MISTAKES!
J.R.WILLIAMS
THE LOW MAN WINS
8-10



CINCINNATI No. 10-66 Duplex Vertical Hydro-Broach, tooled up to broach the rack teeth on parts illustrated here. Complete information on these machines may be obtained by writing for catalog No. M-1848.

These Parts Get a Low Cost Set of Teeth

on CINCINNATI VERTICAL HYDRO-BROACH MACHINE

Prior to Hydro-Broaching

Flat Hydro-Broached in first station

Teeth Hydro-Broached in second station. Finish of teeth, 40 to 50 micro-inches; accuracy ± .0004" on linear pitch. Production complete, 100 per hour.

CINCINNATI No. 10-66 Duplex Vertical Hydro-Broach. Catalog No. M-1848.

Surface broaching, as a machining operation, cut its teeth years ago. Today it is being applied to an ever-increasing variety of parts and operations, including the machining of rack teeth. Cincinnati Application Engineers know how to broach a low-cost set of teeth on short parts or yard-long parts. The most recent example of their work is illustrated here: a CINCINNATI No. 10-66 Duplex Vertical, with complete tooling, ready to broach the teeth on piston rod racks at the lowest cost. ¶The parts arrive completely turned and the stem rough ground. Rack teeth are broached in two progressive operations; a flat which forms the top of the teeth is broached in the left-hand station, and the rack teeth are broached in the right-hand station. Production, 100 per hour complete. ¶CINCINNATI Hydro-Broach Machines and Cincinnati Application Engineers form a team that just can't be beat in visualizing and building complete production packages for your work. These men are ready to help you solve your production problems. Why not write now, enclosing blueprints and complete details.

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Can We Cut Defense Spending Now?

Peace talks have eased tension . . . But President waits for Russia to back up words with actions . . . Spending will hold at about $35 billion with emphasis on advanced weapons—By G. H. Baker.

• SHARP military budget cuts probably won't result from the new "peace and harmony" talks.

President Eisenhower sincerely wants peace, and has tirelessly explored the subject with the Russians in recent weeks. But he is not so naive as to think the Reds can be trusted implicitly, that the United States can junk a large part of its military brawn and brain on mere smiles and promises.

What Ike wants is some good hard samples of Communist intentions to slow the rate of military buildup—or better still, some evidence of disarmament.

Won't Ask Cuts . . . Meanwhile, he will not ask Congress to vote any substantial cuts in the U. S. military budget, nor will he approve any unhealthy cuts in the arms budget if Congress should take it upon itself to vote them.

Until the Reds show they're ready to translate peace talk into tangible peace action, the U. S. is not going to drop much below the current rate of spending in its annual defense and military budget.

Some shifting of emphasis (example: U. S. will buy fewer trucks and vehicles, more guided missiles and advanced-type aircraft) is to continue in the new fiscal year, just as in the past military budget, but the total dollar spending will stick around the $34-$35 billion mark.

Delay Red Ruling . . . There's little or no hope for a fast ruling on whether or not the Mine, Mill and Smelter Workers' Union is Communist-infested.

The Subversive Activities Control Board was petitioned by Attorney General Brownell to rule that the copper-mining and smelting workers' union is "under the domination and control of members of Communist organizations." The board says it will start holding hearings this fall and expects the hearings may run into next year. SACB board members then have to "study the record," another time-consuming task that could run into weeks or months.

It's the first time that the Communist Control Act of 1954 has been brought into play against a union charged with Communist leadership. Mr. Brownell says in his petition to the SACB that the union is "an instrument for the promotion and advancement of the aims and objectives of Communist organizations, foreign Communist governments, and the world Communist movement."

This has been achieved, he says, without the knowledge of the great majority of the members of the union.

Unions Plan Push . . . Union chiefs map plans for labor's biggest and most expensive organizing drive. An all-out campaign (Slogan: "Organize the Unorganized") is to get under way early in 1956 under the banner of the merged AFL and CIO.

Advance reports leaking out of CIO headquarters in Washington suggest that a working kitty in the neighborhood of $6-$7 million is planned for a start, and this will be built and replenished as the drive begins to produce results.

Main goals: All unorganized industrial workers in the South, office workers everywhere, retail and wholesale workers outside big cities.

The CIO United Auto Workers says it will contribute $1 for each of its 1.5 million members, and the CIO United Steel Workers says it will do the same for each of its 1.1 million workers. AFL unions are planning similar action. Both organizations emphasize that individual members will not be tapped for funds. All contributions will come from union treasuries.

Curb Business Training . . . Opponents of businessmen serving in government on an unsalaried basis may have won their fight to kill the program. Chances are good that they have at least succeeded in severely limiting the practice.

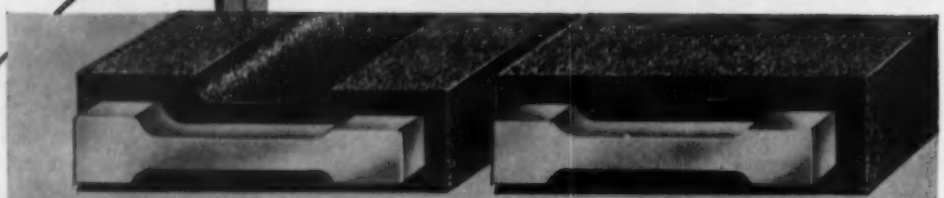
Final version of the Defense Production Act, one of the last bills to pass Congress, contains a new provision requiring businessmen serving as WOCs (without compensation) to submit for publication a record of their business and financial interests.

The amendment requires information on employers; names of corporations of which a WOC has been a director or officer, and lists of holdings of stocks and bonds. Information for 60 days prior to government appointment is required, and reports must be brought up to date every six months.

Another provision limits WOCs to "advisory or consultative" posts, permitting them to hold administrative jobs only when qualified men are not available on a full-time, salaried basis. Businessmen

SAVED $103.46 PER RING!

Switching to Flash Butt-Welding of Mill-Rolled Sections, Slashed Production Cost 76½%



NEW METHOD
Ring, rolled and welded from mill section of approximate shape of finished part.

OLD METHOD
Ring, rolled and welded from rectangular bar size to maximum overall dimensions of finished part.

Rough rings purchased by a well known manufacturer of jet aircraft engines weighed 135 pounds each. Most of this weight was excess metal which had to be machined away. American Welding's Industrial Products Division, working with this company, studied blueprints and recommended a flash butt-welded ring, formed from a special mill-rolled section. Adopting this new ring saved 88 pounds of metal and eliminated much of the machining time required. American Welding now produces thousands of these rings, in a rough-machined state, at less than one-quarter of the original cost.

Would you like to know more about American Welding and what savings it may help to effect on products which you manufacture? Write today — we will be glad to study your problem.

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on loan are also prohibited from making policy decisions, although they may advise government men in policy matters.

The revised act does give sanction to an Administration plan to set up an executive reserve of business, labor and professional leaders for use as key government officials in wartime. Generally, members of the reserve will come to Washington only once a year for short training periods.

Congress Extends SBA

Small Business Administration is to keep its status as an independent, money-lending agency until at least mid-1957.

In extending the life of the agency, Congress voted to:

1. Increase the allowable amount of an individual loan SBA may grant from the former $150,000 to $250,000. This boost may be of negligible importance, for loans made by the agency average $53,000. About two-thirds of its loans are made in participation with banks.

2. Raise the amount in the SBA revolving fund from $85 million to $105 million.

3. Provide that the SBA definition of a small business will be used by all government procurement agencies. As yet, SBA has no standard definition, although it has obtained from other agencies recommendations on factors to be considered in defining a small firm.

4. Permit drought areas to be considered disaster areas within the meaning of the statute. This will allow small firms which can show that their difficulties were caused directly by a drought to get SBA loans at 3 pct interest.

Mexican Steel Talks

A meeting of Mexico's steel and iron companies is scheduled for this fall in the city of Monterey.

The First National Congress of the Siderurgical Industry will meet Oct. 23 to Oct. 26 in sessions open to American as well as Mexican companies. Discussions of the industry's problems and presentation of technical papers will be a part of the congress.

American attendance and participation are urged by Mexico's National Chamber of the Iron and Steel Industry, which is organizing the event and is now in the process of lining up technical paper presentations. Stressing the need for a full exchange of information, the Chamber says the congress will offer an opportunity for the airing and consideration of a wide range of views.

One hundred and twenty-two factories, employing about 35,000, men are members of the Chamber, which by Mexican law includes all of the country's iron and steel producers.

Stockpile:

ODM gets 1 year extension of material buying power.

Defense Production Act, basic law giving government authority to stockpile and allocate materials, has been extended for another year—with only minor restrictions on business.

Act sets up the Office of Defense Mobilization and permits stockpile buying, allocation of critical and strategic raw materials, and generally permits the government to stay ready for any new emergency. Administration had asked for a 2 year extension but the House refused to go along.

Asked Trust Exemption

New version of the law does limit the antitrust exemption to agreements relating strictly to defense contracts, and requires the Attorney General to review all existing antitrust exemptions granted under the act.

President Eisenhower had asked that the antitrust exemption be extended past the length of the Act to make it easier to encourage joint company action for defense.

Also required under the new act are actions to assure that a fair share of DPA contracts go to small business, and that if civilian supplies are allocated, consideration must be given new concerns.

"Boy did I give the nation's economy a boost."

Deny Delaware Funds

Congress and the President reversed each other in the closing days of Congress as Ike on three separate occasions requested funds for beginning the Delaware River deepening, and Congress, which had already authorized the project, refused to vote the money.

The President wants $6 million to begin dredging and rock removal in the section of the channel between Pennypacker Creek, Pa., and Delanco, N. J., and to begin replacement of a bridge. He asks that the funds be appropriated on the strength of an informal agreement that a national cost-sharing formula would be developed for such project later, and applied to the Delaware program.

Congress last year authorized the project, and after Ike's first request, included the $6 million in an amendment to the public works bill. But the appropriation was later eliminated. Total cost of the project was estimated at slightly over $91 million last year, is now $95.1 million.

Delay Titanium Plant

The government postponed again—this time until Sept. 1—its decision on whether to sign up with the du Pont Corp. for construction of a titanium plant at New Johnsonville, Tenn.

General Services Administration announced its decision, the third such in recent months, after conferring with du Pont officials and government defense planners.

UNDER PRESSURE? TRY 4500 PSI AT 1150 F

There's a new concept in big boiler design: The Universal Pressure Steam Generator. It operates either below the critical—3206 psi—or smashes through the pressure barrier. A unit now being built has a design pressure of 5500 psi, delivers steam at 4500 psi and 1150 F. It's a "once-through" unit; put water in one end of a tube and steam comes out the other, without using a steam drum.

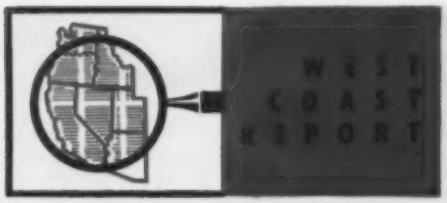
When B&W engineers designed this new boiler they turned to their own metallurgical and tubular products experience with alloys for pressure and temperature service to devise the tubing complex that is the heart of the unit. The chart shows the variety of analyses in sizes from 1-inch O.D. to 2½-inch O.D. and wall thicknesses from 0.10-inch to 0.55-inch.

Carbon Steel • Carbon Moly
Croloy ½ • Croloy 1
Croloy 1¼ • Croloy 2¼
Croloy 3M • Croloy 9M
Croloy 18-8

The best way to avoid operating under *personal* pressure on any job is to call for B&W Pressure Tubing. There's a grade, size, length and wall for virtually every pressure, temperature and corrosion resistance requirement. *Write for Technical Bulletin 1A.*

B&W
TUBULAR PRODUCTS DIVISION

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa. and Milwaukee, Wis.: Seamless Tubing, Welded Stainless Steel Tubing
Alliance, Ohio: Welded Carbon Steel Tubing
Milwaukee, Wis: Seamless Welding Fittings
TA-5028(P)



Dispersal Threatens West Industry

West industrialists fear aircraft dispersal program will mushroom . . . Supplier industries also face cutbacks . . . Missile programs are already being moved elsewhere . . . Future grim—By R. R. Kay.

◆ FUTURE GROWTH of the West Coast is getting a stiff kick in the britches.

U. S. Air Force aircraft production dispersal policy is hurting—and hard. It's catching on like a forest fire. Only an immediate policy change will put the fire out.

Worried industrialists are asking, "Where will it stop?" and "Will the change of Air Force Secretaries make a difference?"

USAF dispersal blueprint is now crystal clear. Orders are out: build all new engineering and production facilities away from Coast states! Trend is toward Texas, Missouri, Colorado, and Utah.

West Coast aircraft plants, deep in guided missile research and development, won't get deep into missile production here. That's a serious blow.

Big Employer . . . Future of thousands of metalworking companies, satellites of the giant aircraft industry, is at stake. Aircraft manufacture is basic to West Coast's economy.

Roughly 50 pct of the nation's aircraft production is here. Plane and parts manufacturers employ 260,000 with a $24 million payroll per week. About one million people are directly dependent on aircraft paychecks. A second million makes its living by selling and servicing aircraft employees.

Boeing Airplane Co., alone, hires 20 pct of all Seattle-area factory employment; Los Angeles metropolitan area, 25 pct; San Diego, 75 pct.

A thousand jobs in aircraft create another thousand in other lines: metalworking, electronics, and many non-manufacturing. Each job lost in aircraft has a double-barrelled effect.

Hurts Growth . . . Best aircraft brains say future military aircraft will be uninhabited. Greatest emphasis today is on pilotless planes and missiles—what the trade calls "follow-on business to airplanes." If this production won't be permitted in plants here, future growth of the industry on the West Coast is sure to be stunted.

Suppose in 1945, in a similar move, the Defense Department had said, "We won't move existing facilities out of the West Coast, but you can't have any new jet business." This would have been the stopper on what's grown up here since: an industry now the largest manufacturing employer.

Many metalworking companies here are pipe dreaming—they think they won't be affected. A sure bet: once the big planemakers build plants out of this area, they're not going to send their sub-contract work back here. It's just plain economically unsound.

"Beat it—here comes the vice squad"

Effects Felt . . . Take a look at what's happened in the few months since the dispersal policy is in effect:

Lockheed Aircraft Corp., Burbank, Calif., stopped work on its $10-million, guided missile plant. Orders are to look elsewhere for a site.

Boeing Airplane Co., Seattle, was told it must go well inland to build its $100-million, 20,000-employee Bomarc guided missile plant.

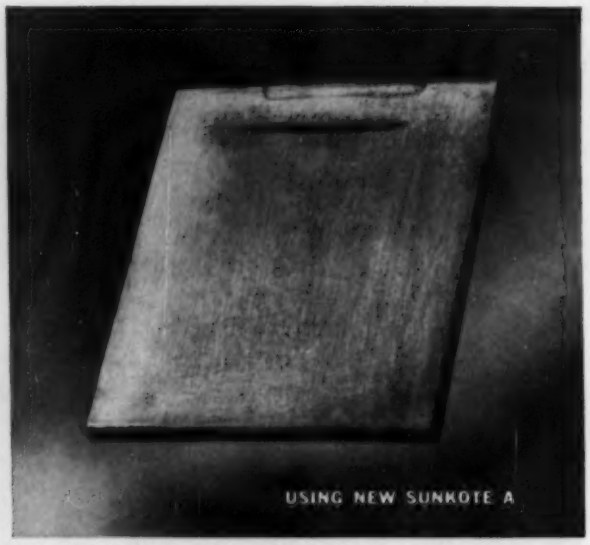
Aerojet-General Corp., Azusa, Calif., rocket engine makers, was told its $10-million plant must go inland. Joplin, Mo., will get it.

Menasco Mfg. Co., Burbank, Calif., is going to the Dallas-Ft. Worth area to build a $5-million, 100,000-sq-ft plant to make aircraft landing gears. It expects to employ 500 and develop new products.

Northrop Aircraft, Inc., Hawthorne, Calif., and its subsidiary, Radioplane Co., are planning a large drone-missile facility in El Paso, Texas. A $1-million, 25,000-sq-ft pilot plant will be ready by year-end. It's the No. 1 step in a 640-acre development. Will southern California lose Northrop's present missile production?

Ramo-Wooldridge Corp., Los Angeles, Thompson Products, Inc., affiliate, has orders to build its $20-million missile production plant away from the Coast.

Humidity Cabinet Test proves superiority of new coating oil. Using ordinary slushing oil, steel test panel (on left) shows harmful rust after only 100 hours in humidity cabinet with relative humidity of 100% at 120 F. An identical steel test panel (above right), protected by new Sunkote A, shows no rust or stain whatsoever after 200 hours under same rust test conditions of high humidity and temperature.



ANNOUNCING SUNKOTE A

a new, low-cost rust preventive coating for hot and cold rolled strip and sheet steel

SUNKOTE A is easily applied by dip, roller, or spray. Special compounding provides extra protection against rust and stain at lowest cost.

Sunkote A is specifically compounded to protect hot-and-cold rolled strip and sheet steel against rust and stain for long periods in storage and in transit.

Economical to use, Sunkote A is moderately priced... gives maximum coverage and protection... can be applied by all usual methods... is easily removed by any of the normal cleaning processes.

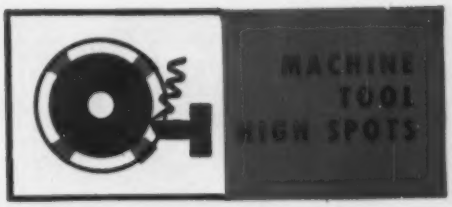
For complete information about this new product, see your Sun representative...or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. IA-8.

SUNOCO

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY Philadelphia 3, Pa.

IN CANADA: SUN OIL COMPANY, LTD., TORONTO AND MONTREAL



Are There Too Many Breakdowns?

Electrical failures are major cause of downtime . . . Many result from motors not designed for work conditions . . . Self-cooled motors, extra horsepower would reduce trouble—By *E. J. Egan, Jr.*

◆ MACHINE tools, like the original ball point pens, will probably never be advertised to work "under water." But there may come a time when they will be built more directly in line with specified use conditions.

What causes a machine tool shut down? Sometimes it is due to a sudden tool failure or mishandling. But very often it is caused by a burned-out motor or the failure of some other electrical or hydraulic component.

The perennial problem at the various machine tool technical forums is how to design these components to be trouble free under a variety of use conditions.

For example, motors, relays, and limit switches that function extremely well in a well-ventilated, dust-free atmosphere may suddenly give all kinds of trouble on a similar machine exposed to excessive dust, moisture or certain fume conditions.

Depend on Motors . . . Since machine tool users depend so heavily on electric motors for trouble free production they are primarily concerned with motor reliability. More than ever before, both users and builders of machine tools are becoming aware that it is extremely important to choose a particular motor for a particular job condition.

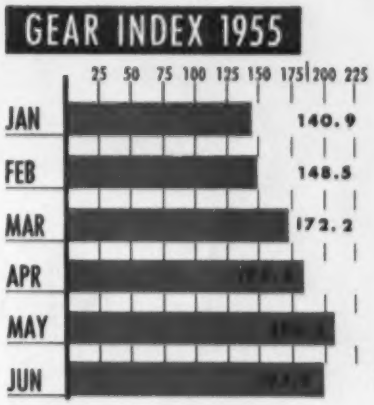
This not only means that the motor must be powerful enough to do the work; it must have bearings, shafts and provisions for cooling that will allow it to operate with a minimum of maintenance regardless of difficult dust or moisture problems.

Motor bearing failures are a major source of downtime in many user plants. The problem is often magnified by the fact that maintenance crews may have to lubricate hundreds, or even thousands of machine tool motors on a regular schedule. Despite the fact that most of the modern maintenance programs are extremely efficient, users consider that the rate of unexpected bearing failures is still too high. For this reason, machine tool customers sincerely hope that bearing construction can be greatly improved.

Get Rid of Fans . . . Some users of machine tools are also pressuring the builders and the electrical manufacturers to eliminate fan cooled motors wherever possible. Units cooled in this manner must be kept free of contamination by oil, cutting fluids, metal particles and the like. Otherwise, failure will likely occur due to over heating.

But keeping such contaminants out of motors demands a wide variety of "filtration" techniques and devices. Users feel that it would be much simpler to have totally enclosed, self-cooled motors which would, by virtue of their own design, afford adequate protection against contamination.

Overload Motors . . . Another frequent cause of motor failure is overloading. Slight changes in the nature of the work being handled by a machine tool will often shift the power requirement far beyond basic motor capacity. To avoid burn-outs due to overloading, builders and their customers are beginning to see that extra horsepower capacity may be well worth the additional cost.



Base: 1947-49 = 100
Source: American Gear Manufacturers Assn.

Defense Dept. is now authorized to spend another $100 million on special-purpose machine tools as part of the program of keeping the nation's industrial base up to date. As in last year's buying program, no standard tools will be bought. Air Force will again spend about 85 pct of the total sum, will concentrate on big, long lead time equipment.

More Apprentices

The steady upswing in the number of apprentices being hired is expected to continue at least through the end of the year.

Apprentice program in the metal working trades remains fairly constant at 32,504, well above the level of recent years.

A net increase of 700 trainees is reported in the construction industry in the first three months.

FOR SIMPLIFIED TOOLING AND LESS SCRAP

Check into WATERBURY FARREL MULTIPLE STATION FORMING MACHINES

To minimize costs on your shallow or long forming operations, look into Waterbury Farrel Multiple Station equipment.

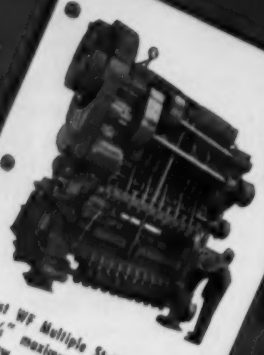
It offers several advantages over the progressive die method.

For example, these Waterbury Farrel machines can—

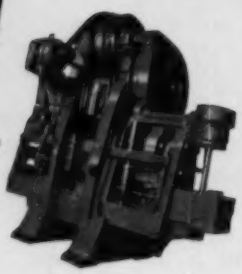
- CUT MATERIAL COSTS—By reducing scrap through more complete utilization of strip widths.
- REDUCE TOOL COSTS.
- PERMIT INDIVIDUAL ADJUSTMENTS FOR EACH TOOL.
- MAKE TOOL CHANGES QUICKER AND EASIER.

The machines shown here are just a few examples of Waterbury Farrel's line of multiple station forming equipment. All are ruggedly engineered for long-lived efficiency and low maintenance operation.

Write or phone for further information

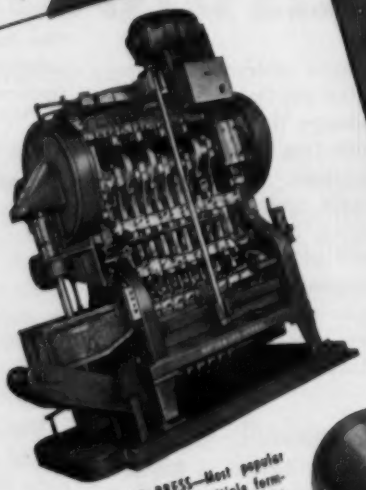


Largest WF Multiple Station Machine for 6¼" maximum blank—3¼" deep draw.

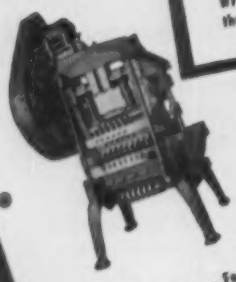


WF ESCUTCHEON PLATE MACHINE — for heavy forming.

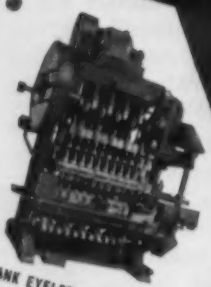
WF DOUBLE GATED PRESS—for two or three operation.



WF MULTIPLUNGER PRESS—Most popular machine for hardware and multiple forming work where medium swaging and drawing is required. Has new, electrically operated air clutch—individual plunger operation and adjustments — four motion transfer bars with safety fingers. At the delivery end, conveyor lifts finished work to barrel height.



WF TRANSFER PRESS — For shallow work and higher speed operation.



WF CRANK EYELET MACHINE — These machines are designed for lighter work than multiple plunger presses, but will handle heavier forming than WF's cam Eyelet Machines.

WATERBURY FARREL FOUNDRY & MACHINE CO. — WATERBURY, CONN.

WATERBURY FOUNDED 1851 FARREL

POWER PRESSES — Crank, Cam and Toggle; also Rack and Pinion Presses • Eyelet Machines • Multiple Plunger Presses • Horizontal and Hydraulic Presses, etc. MILL MACHINERY — Rolling Mills: Strip, Rod, Wire Flattening, (For Ferrous and Non Ferrous Metals) • Also Slitters • Straighteners • Cut-off Saws • Coilers • Winders, etc. WIRE MILL EQUIPMENT — Continuous Wire Drawing Machines (Upright Cone and Tandem) • Wire Flattening Mills • Chain Draw Benches • Pointers • Swagers • Bull Blocks • String-up Machines • Spoolers, etc. COLD PROCESS BOLT & NUT MACHINERY — Headers (all types) • Rivet Machinery • Trimmers • Thread Rolling Machines • Slotters • Nut Formers and Tappers, etc.

UNITED

35,000 TON FORGING PRESS

A NEW 35,000 ton hydraulic forging press being built by UNITED for the USAF Heavy Press Expansion Program to help bring the United States to a commanding position in the production of modern aircraft for the armed services.

UNITED

ENGINEERING AND FOUNDRY COMPANY

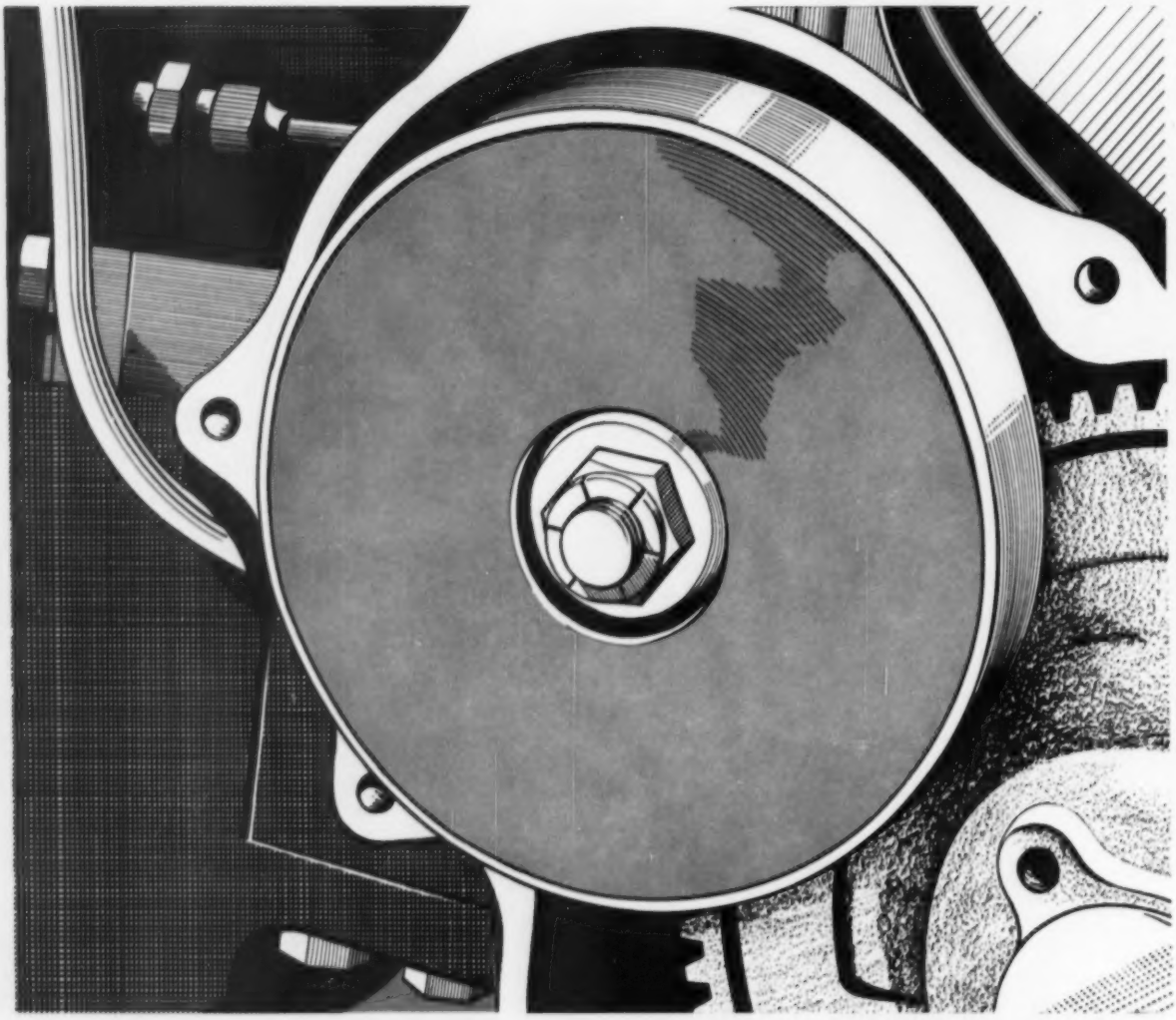
Pittsburgh, Pennsylvania

Plants at: Pittsburgh • Vandergrift • Youngstown • Canton
Wilmington (Labdell United Division)

Subsidiaries: Adamson United Company, Akron, Ohio
Stedman Foundry and Machine Company, Inc., Aurora, Indiana

Designers and Builders of Ferrous and Non-Ferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

FLEXLOC AT WORK



MORE AND MORE FLEXLOC LOCKNUTS are being used where assemblies must be held together. This electric chain saw is a good example of an application for which FLEXLOCS are well suited.

A FLEXLOC Self-Locking Nut is used here to hold the driver gear in place. Even high-speed cutting, extreme vibration, and rough handling do not loosen the FLEXLOC locknut. These one-piece, all-metal locknuts are available in a full range of sizes. Standard FLEXLOCS are stocked by authorized industrial distributors in sizes from #4 to 2". Write for Bulletin 866 and samples. STANDARD PRESSED STEEL CO., Jenkintown 17, Pa.

DO YOU KNOW? Standard FLEXLOCS smooth off rough bolt threads. The locking threads on all-metal FLEXLOCS are not chewed up when used on rough bolts.

Standard FLEXLOCS lock securely on bolts varying in diameter tolerances. The all-metal, resilient locking sections of the nut accommodate themselves to the diameter tolerances.

Standard FLEXLOCS are one piece, all metal. They are not affected by temperatures to 550°F. Nuts lacking these features have a more restricted temperature range.

Standard FLEXLOCS lock securely—stopped or seated—when 1½ threads of a standard bolt are past the top of the nut.

Standard FLEXLOCS are not affected by moisture, oil, dirt or grit. They lock efficiently under all conditions, regardless of the vibration encountered.

FLEXLOC®

LOCKNUT DIVISION

sps

JENKINTOWN PENNSYLVANIA

The Iron Age

SALUTES

Ernest R. Johnson **Head of operations at Republic, he came up through basic mill jobs, was in an important steel developments. He is a capable, amiable leader, well educated and well trained.**

Republic's Ernie Johnson arrives early each day at his 16th floor Cleveland office. Vice president in charge of operations, he talks by phone with plant managers, confers with other executives. He puts in a long, full day and there's little waste time.

When plant men call with a problem, they talk to a boss who spent his early years as an openhearth helper. Onetime strander and straightener in the bar mills, husky Ernie Johnson knows the details of steelmaking. He knows the problems, is good at coming up with answers.

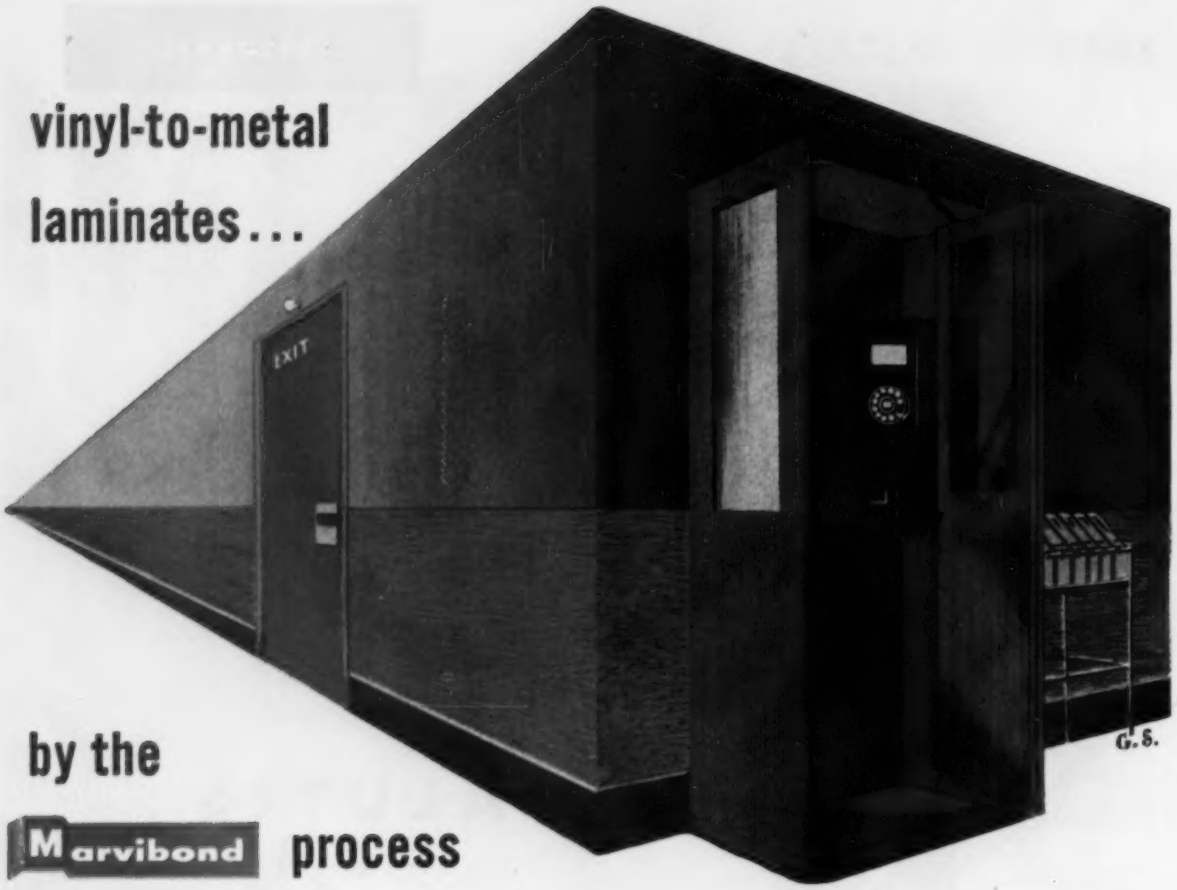
Administrative problems have a similar way of solving themselves for the boss of Republic's 55,000-man operation. Mr. Johnson has the rare quality of making people want to do things for him. He's the kind of man you don't want to let down. Which may be another way of saying he's a leader who's a nice guy.

Third reason for his effectiveness is a solid metallurgical background. He holds batchelors and masters degrees in engineering, served some 20 years as a working metallurgist for steel plants. In an age of specialists, he combines practical and theoretical knowledge with personal leadership and administrative ability.

Mr. Johnson grew up in industrial Michigan and Illinois. Son of a Swedish-born die sinker, he was a delivery boy, warehouseman and foundryman in the years before his graduation from Michigan U. In 1922, he came to Massillon, O., to work for Central Steel Corp., a Republic predecessor. He advanced through a variety of fundamental jobs, gradually moving into the thick of alloy and stainless steel development. In 1944 he became district chief metallurgist; in 1946 he was named assistant manager of the Central Alloy District. Performance in these posts stamped him for still bigger things and led to a succession of high executive jobs, capped last year by his appointment as operations vice president.

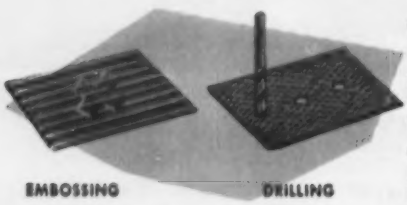
Mr. Johnson likes golf, which he learned as a caddy, and still shoots in the low eighties. Home loafing is his favorite recreation.

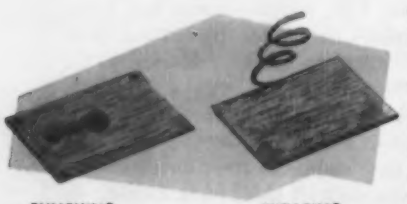
vinyl-to-metal laminates...

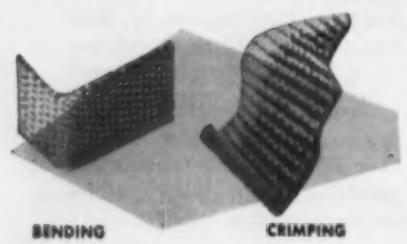


by the Marvibond process

for beauty and practicality in a building material







The Clad-Rex Steel Co.† produces vinyl-to-metal laminates by the Marvibond process.

Scuff-proof and rust-proof vinyls are being permanently united with steel and aluminum, by Clad-Rex, at a rate of 4,000 sq. ft. an hour. And Naugatuck's Marvibond process makes this possible... the bonding of specially formulated vinyl film or sheet to most metals on a continuous production basis.

The Marvibond* process permanently weds the vinyl to the metal *before the product is formed*...eliminating expensive finishing operations. Marvibonded vinyl-metal laminates can't be separated by bending, crimping, drilling, embossing, punching, or drawing...can be formed with standard metal working tools.

Practically any surface effect can be achieved! Smooth or matte finishes, leather-like grains, marble patterns, prints, weaves, and sculptured appearances are not only possible but *economical.* And Marvibonded vinyls will not chip, crack or craze...are far superior to paints, lacquers, varnishes, phenolic and alkyd finishes.

Why not consider the advantages that Marvibonded laminates can add to your products? This exceptional material has a great future in wall paneling, vending and business machines, office furniture and automobile interiors...in fact, *wherever* sheet metal is used.

For samples and technical information, write to us on your company letterhead, TODAY.

†Denver, Colorado

*Patent applied for

Naugatuck Chemical

Division of United States Rubber Company
Naugatuck, Connecticut

US RUBBER

BRANCHES: Akron • Boston • Charlotte • Chicago • Los Angeles • Memphis • New York • Philadelphia
IN CANADA: Naugatuck Chemicals, Elmira, Ontario • Rubber Chemicals • Synthetic Rubber • Plastics • Agricultural Chemicals • Reclaimed Rubber • Latices • Cable Address: Rubexport, N.Y.

The Iron Age INTRODUCES

Griswold A. Price, appointed assistant vice-president, sales, western area, **U. S. Steel Corp.**; while **M. S. Glascock** was promoted to general superintendent of the Fairfield Tin Mill of the Tennessee Coal & Iron Div.; and **D. W. Lasell** was appointed assistant superintendent of the Fairfield Tin Mill; and **R. W. Hutton** was promoted to general superintendent of the Cotton Tie and Merchant Mills at Fairfield Steel Works; **T. G. Shurett** was advanced to general foreman.

T. D. Brissman, appointed special representative, oil and gas industry, National Tube Div., **U. S. Steel Corp.**; while **Griswold A. Price** appointed assistant vice-president, sales, western area, **U. S. Steel Corp.**; and **Harvey Jordan** was presented with a watch for 40 years of service by **Joseph H. Kosicky.**

D. W. Berry, appointed assistant chief engineer for the **Westinghouse Electric Corp.'s** aviation gas turbine division, Kansas City, Mo.; and **Lauris L. Grant** has been appointed manager of the machinery electrification section of the industrial sales department, apparatus division.

John R. Henderson, named sales manager, Detroit Branch, **Yale & Towne Mfg. Co.,** with headquarters at 4466 Woodward Ave., Detroit.

Kenneth Lieber, appointed assistant vice-president in charge of sales, National Tube Div., **U. S. Steel Corp.,** Pittsburgh.

Grover C. Arnwine and **James V. Fairley,** appointed assistant sales managers of **Alabama By-Products Corp.,** Birmingham, Ala.

Robert L. Williamson, appointed manager of pig and ingot sales, **ALCOA,** Pittsburgh, and **John S. Hamilton,** as manager of foil products sales.

Daniel A. Sherick, appointed plant manager, Brainard Steel Div., **Sharon Steel Corp.,** Warren, Ohio.

Samuel D. Richards, appointed assistant to the treasurer, **Clark Equipment Co.,** Buchannan, Mich.

Wallace Jay, appointed manager of general accounting at the Fort Worth plant of Convair, a division of **General Dynamics Corp.**

Wallace E. Gordon, named director of advertising department of the Grasselli Chemicals Dept. of **E. I. du Pont DeNemours & Co.**

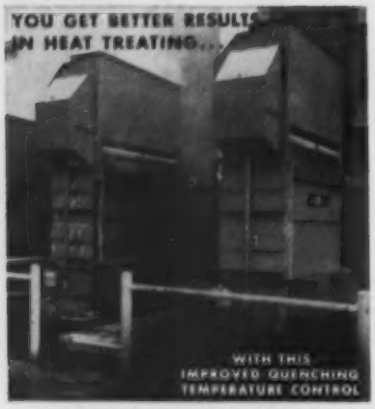
Carl S. Rice, named sales manager of the Cutter Div., **Fellows Gear Shaper Co.,** Springfield, Vt.; **J. F. Hronek,** named sales manager, Plastics Div., and **George H. Sanborn,** general sales manager of the company.

CHARLES W. LEE, elected president of Consolidated Western Steel Div., U. S. Steel Corp.

MAX RIEBENBACK, III, elected president, Industrial Bronhoist Corp., Philadelphia.

GRISWOLD A. PRICE, appointed assistant vice-president sales Western area, for the U. S. Steel Corp.

CARL I. ZAK, appointed general sales manager of Phoenix Steel Tube Div., of Barium Steel Corp., New York.



Photograph . . . Permission of Ford Motor Co.

Use the NIAGARA AERO HEAT EXCHANGER to control the temperature of your quench bath and you remove the heat at its rate of input, always quenching at the exact temperature that will give your product the best physical properties. You get uniform results throughout the day's production, prevent losses, avoid rejections, increase your heat treating capacity.

The Niagara Aero Heat Exchanger transfers the heat to atmospheric air by evaporative cooling. It extends your quenching capacity without using extra water. It pays for itself with water savings.

In the installation illustrated the quench is caustic soda. Water also is accurately cooled and the system is easily kept clean. With an oil quench an extra advantage is to prevent flash fires.

You can cool and hold accurately the temperature of all fluids, gases, air, water, oils, solutions, chemicals for processes and coolants for mechanical and electrical equipment. With the Niagara Aero Heat Exchanger you have closed system cooling, free from dirt and scale.

For further information write for Bulletin No. 120

NIAGARA BLOWER COMPANY

Dept. I.A., 405 Lexington Ave.
NEW YORK 17, N. Y.

District Engineers in Principal Cities of U. S. and Canada

Harry H. Platt, prominent Detroit attorney, appointed umpire under new labor agreement between Ford Motor Co. and the UAW-CIO.

Carryl A. Asher, A. D. Stover and **John Hume,** appointed district managers in Grinding Wheel Div. of **Electro Refractories & Abrasives Corp.,** Buffalo.

John B. Lawson, appointed as assistant general manager of **Ford Motor Co.'s** Aircraft Engine Div., Chicago.

George L. Irvine, appointed commercial vice-president, **General Electric Corp.,** Chicago.

Fred Thompson, appointed manager, public relations dept., Tractor & Implement Div., **Ford Motor Co.**

James J. Edwards, named manager of the new **Fisher Body** stamping plant, which is being constructed at Marion, Ind. **Edward H. Goebel** has been appointed production manager and **F. H. Jeremy** resident comptroller of Fisher Body's new plant at Mansfield, Ohio.

H. Erza Eberhardt, elected chairman of the board and treasurer of **Gould & Eberhardt,** Irvington, N. J. **Gustave E. Spies** was elected president; **F. G. Eberhardt** and **W. C. Eberhardt,** vice-presidents; **W. H. Gardner,** secretary, and **F. D. Smith,** assistant secretary and assistant treasurer.

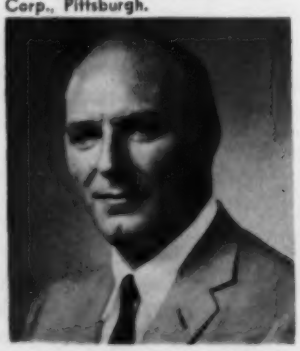
George E. Flaccus, Jr., appointed vice-president, industrial relations, **Jones & Laughlin Steel Corp.,** Pittsburgh.

Albert H. Hoffman, named assistant comptroller, **National Lead Co.,** New York, while **Charles F. Peters** assumes the role of comptroller of the Titanium Div., and **Walter J. Hawley,** comptroller of the St. Louis and Southwestern branches; and **Harold D. Prior,** appointed manager of the Washington, D. C., office.

KENNETH F. MAXCY, JR., promoted to manager of newly-created production planning dept., of Pittsburgh Steel Co.

WILLIAM A. SCHRADE, elected president of Clemson Bros., Inc., Middletown, N. Y.

GEORGE E. FLACCUS, JR., appointed vice-president, industrial relations, Jones & Laughlin Steel Corp., Pittsburgh.



LEO J. PANTAS, elected vice-president, Yale & Towne Mfg. Co., N. Y.

SEE

DOWN · TO · EARTH

SHOP JOBS

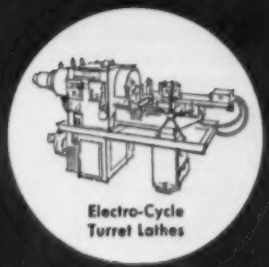
AT 717

THE MACHINE TOOL SHOW
CHICAGO, ILL.
SEPT. 6-17, 1955
INTERNATIONAL AMPHITHEATRE

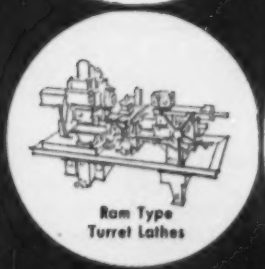
Machine designs change, but practically all these changes are made to improve methods for machining jobs such as you have in your own plant right now!

That's what we believe you want to see at the Machine Tool Show—better methods for doing your work. And that's exactly what you'll see at the Warner & Swasey booth . . . the most modern machines, utilizing the latest production techniques, turning out typical shop jobs.

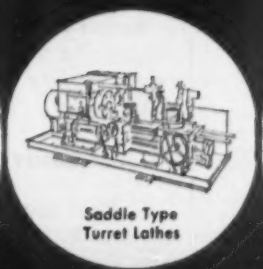
We believe you will take home an important "souvenir" of your visit to Booth 717 . . . ideas on how you can machine metal more efficiently, more profitably!



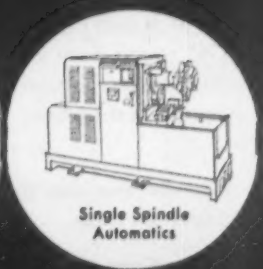
Electro-Cycle Turret Lathes



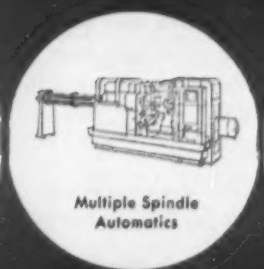
Ram Type Turret Lathes



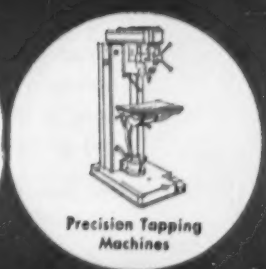
Saddle Type Turret Lathes



Single Spindle Automatics



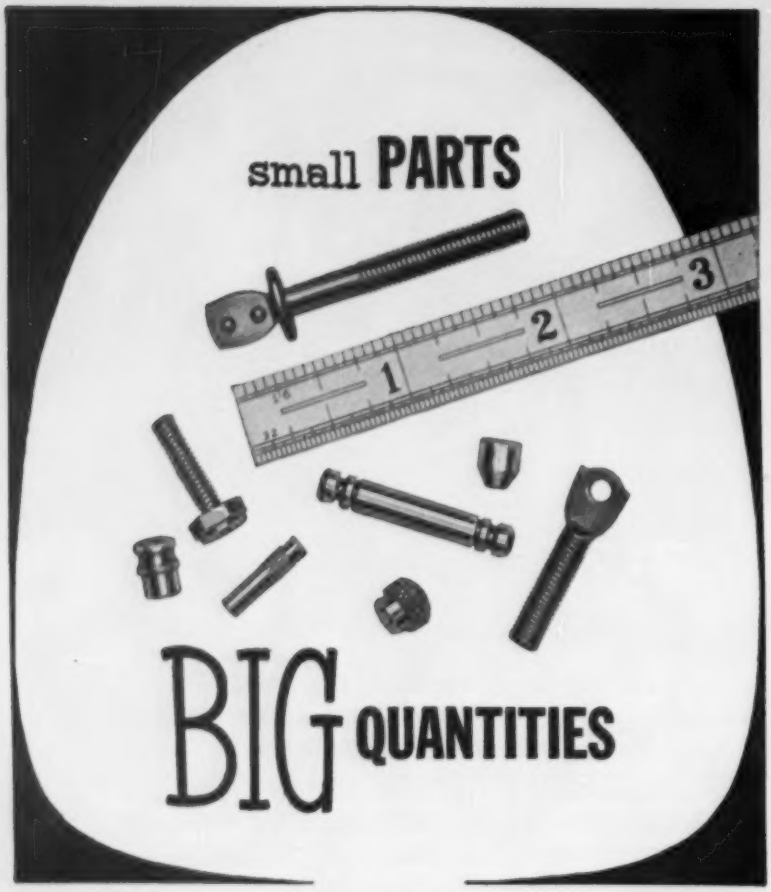
Multiple Spindle Automatics



Precision Tapping Machines

75TH ANNIVERSARY YEAR
WARNER & SWASEY
Cleveland
PRECISION MACHINERY
1880 — 1955

NO MATTER WHICH WAY YOU TURN . . .
WARNER & SWASEY CUTS COSTS



Here are a few parts turned out on high-speed multiple-spindle automatic screw machines in quantity. Some are complete as they drop from the machine.

Others require additional finishing operations, like the largest piece, a special 10-32 collar screw with head formed and flattened on a punch press, *triple-lead* roll-threaded and then copper plated.

Your requirements may be for smaller or larger pieces. Western's capacity ranges from 1/16 to 4 7/8" round, with *all* necessary finishing equipment for such secondary operations as milling, drilling, threading, tapping, heat-treating and grinding.

For fast, reliable delivery, precision quality and low cost, it pays you to put WESTERN on your production team.

Why not send us your blueprints for quotations...today?

Western Automatic
Machine Screw Company
380 Woodland Ave., Elyria, O.

Precision Screw Products, Parts and Assemblies Since 1873

PERSONNEL

J. Gordon Hutchinson, appointed comptroller of **Wheeling Steel Corp.,** Wheeling, W. Va.

Stanley R. See, elected vice-president and assistant to the president, **Industrial Brownhoist,** Philadelphia.

Orville T. Barnett, promoted to assistant manager of the metals research department, Armour Research Foundation of **Illinois Institute of Technology,** Chicago.

James "Jay" W. Morrow, appointed chief clerk of the newly created tabulating division of the works accounting department at the Campbell Works Office Bldg. of **Youngstown Sheet & Tube Co.,** Youngstown, Ohio.

Herbert J. Scott, named construction engineer specialist in the Chicago area for the Nelson Stud Welding Div. of **Gregory Industries,** Lorain, Ohhio.

Preston Williams, appointed to sales office, New York branch, **Syntron Co.,** Homer City, Pa.; while **Bradford H. Voltz** will assume the duties of power tool and paper jogger salesman for the Pittsburgh and western Pennsylvania area.

Robert D. Stottlemeyer, appointed division manager of the Northwest Div., **The National Supply Co.,** Pittsburgh.

OBITUARIES

C. Paul Howard, assistant treasurer of **E. W. Bliss Co.,** Mt. Lebanon, Pa.

James Warner Shook, vice-president and general manager of **Shook & Fletcher Supply Co.,** Birmingham, Ala.

Arvid E. Roach, supervisor of bearing development for **General Motors Research Laboratories,** Detroit.

A special report on

PROGRESS AT H-P-M

To Our Customers and Friends

1. H-P-M is now pledged to a series of broad, new policy decisions designed to strengthen our sales, service and manufacturing program. The growing demand for hydraulic equipment increases our responsibilities to the industry.
2. H-P-M will carry out this program as an independent company.
3. Significant developments are in the making for the months ahead. They will be announced within the next few months.
4. Key executives have been selected to play important roles in this new program. Their combined experience with H-P-M in the hydraulic field will accelerate the fulfillment of our plans and strengthen our position.

WILLIAM H. BENNETT
Vice President in Charge of Sales
A well-known H-P-M personality and graduate of University of Cincinnati, has served H-P-M as engineer, Sales Engineer, Director of Engineering, Sales Manager and now Vice President in Charge of Sales. Extensive experience in all phases of hydraulic design and application. Professional Engineer.

GLEN R. PITTMAN
Sales Manager, Hydraulic Power Division
Has successfully served in engineering capacities with H-P-M since 1938. Left the company briefly for another position and returns to head up Power Division sales of hydraulic pumps, cylinders, valves and power systems.

J. W. ARNOLD
Vice President in Charge of Manufacturing
A graduate of General Motors Institute with successful manufacturing and engineering experience in companies such as Cadillac, Ford, Clark Equipment Co., United Stove, and Erie Engine and Manufacturing Co. He brings to H-P-M a wealth of manufacturing managerial talent.

WILLIAM H. WOODWARD
Secretary-Treasurer
A graduate of Ohio State, has served the company since 1946 in the accounting department, as controller and assistant secretary. His promotion to Secretary-Treasurer is an important step in H-P-M's new program.

ROBERT J. LINDSEY
Director of Engineering
Another experienced H-P-M engineer promoted up through the ranks from engineer to Director of Engineering. Served as Chief Engineer of Elmes Engineering Division, American Steel Foundries. He returns to H-P-M now as Director of Engineering.

THE HYDRAULIC PRESS MANUFACTURING CO.
1006 MARION ROAD
Mount Gilead, Ohio
U. S. A.

HPM

Which chain problem is yours?

Your Republic Chain Distributor can come up with the answer...

Is your problem one of corrosion-resistance, such as that solved by the Republic Chain application illustrated at right? Or is hoisting, hauling, holding, towing, bundling? Or is it a selection of chain for use with the product you make?

In any case, you'll want to be sure of your chainmaker. Republic backs its chain distributors with these vital services:

COMPLETE LINE—Your Republic Chain Distributor offers a complete line of every type and size of welded and weldless chain, chain slings, attachments and accessories in all standard and special carbon, alloy and stainless steel analyses.

DEPENDABLE DELIVERY AND SERVICE—His own stocks of chain are backed by Republic Round Chain plants and warehouses strategically located in principal cities from coast to coast. You get exactly the chain you need in a hurry, eliminating costly downtime and delays.

ENGINEERING—He has at his disposal the services of Republic's Field Engineering Department—staffed by competent chain engineers thoroughly trained to handle all types of chain problems.

QUALITY PRODUCTS—When you buy chain from your Republic Distributor, you're assured of a top-quality product in every sense of the word. Republic uses its own ores, makes its own steels, rolls its own bars, draws its own wire. In fact, Republic is the only chain producer who can control quality at every stage of production from raw material to finished product.

RESEARCH—Your Republic Chain Distributor offers you further assurance of top quality because he's backed by a research program devoted to the continuous task of improving chain. Republic research is always at work, from selection of materials through forming, welding, heat treating to the final inspection of the finished chain.

So, whether your chain problem is corrosion-resistance, materials handling or product applications—call your Republic Chain Distributor. He can come up with the answer. Mail the coupon for the name of your nearby Republic Chain Distributor.

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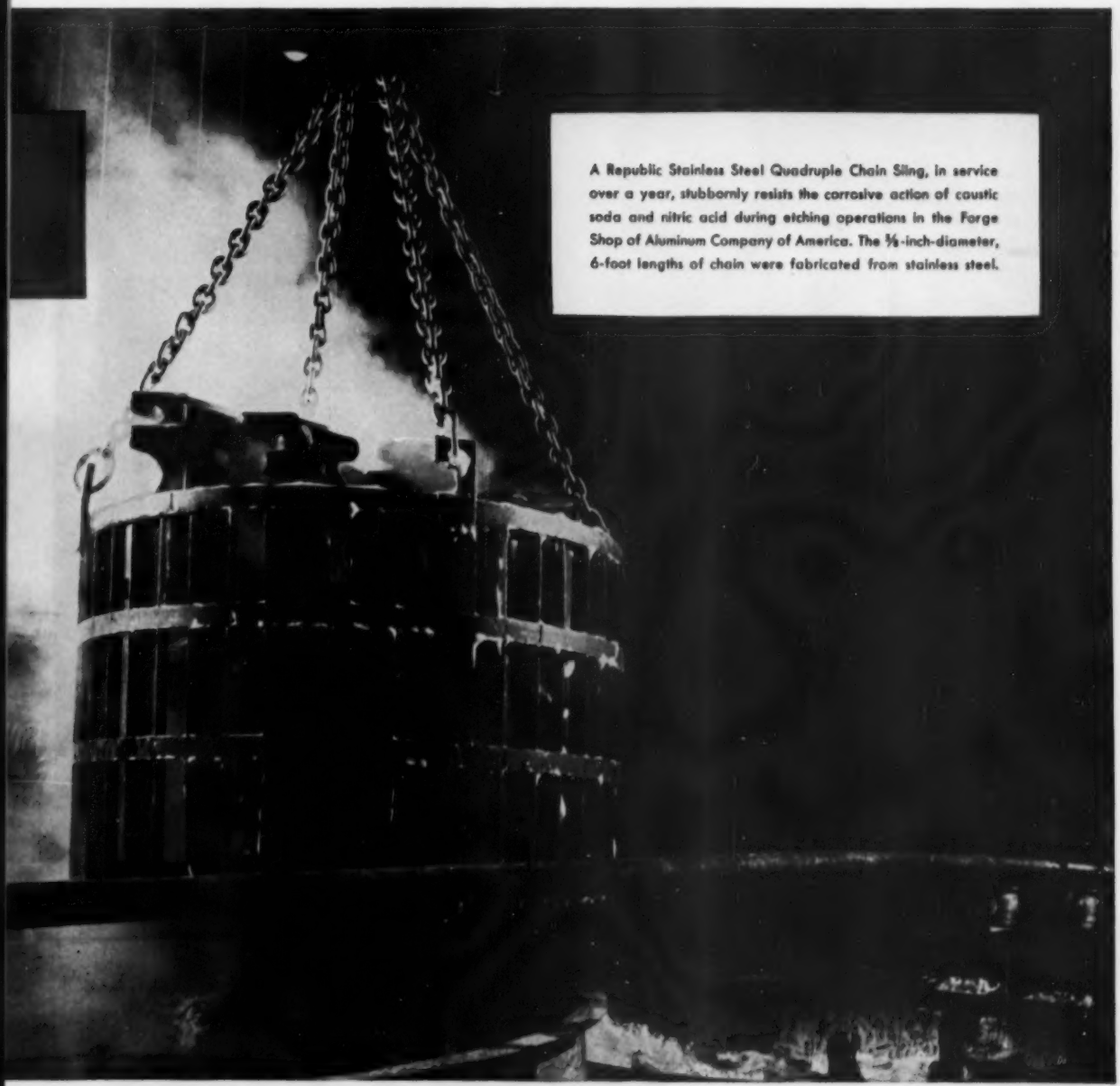
World's Widest Range of Standard Steels and Steel Products

HERE'S THE ANSWER TO THE PROBLEM OF MORE SPACE—Truscon Steel Buildings. Whether you need a single building or a well-arranged group, Republic's Truscon Division can help you select the right layout to meet your requirements. You'll get a building that's fire resistant, well lighted, properly ventilated, easy to maintain. Truscon engineers will help you from beginning to completion.

PIPE PROBLEMS? Republic Steel Pipe may be the answer. It's been satisfying customers for over 40 years. Today, the improved Continuous Butt Weld process makes it better than ever, yet it costs no more than ordinary pipe. Republic Steel Pipe has uniform strength and ductility. It is easily threaded, readily bent. Your Republic Pipe Distributor has it in sizes you want.



A Republic Stainless Steel Quadruple Chain Sling, in service over a year, stubbornly resists the corrosive action of caustic soda and nitric acid during etching operations in the Forge Shop of Aluminum Company of America. The ⅝-inch-diameter, 6-foot lengths of chain were fabricated from stainless steel.

FASTENER PROBLEM? You can get exactly the fasteners you need for assembly and maintenance work from more than 20,000 regular types and sizes made and stocked by Republic. They're always uniform, easy to assemble, tough and strong to withstand shock and vibration. Specify Republic Fasteners on your next order from your distributor.

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☐ Truscon® Steel Buildings ☐ Steel Pipe ☐ Fasteners

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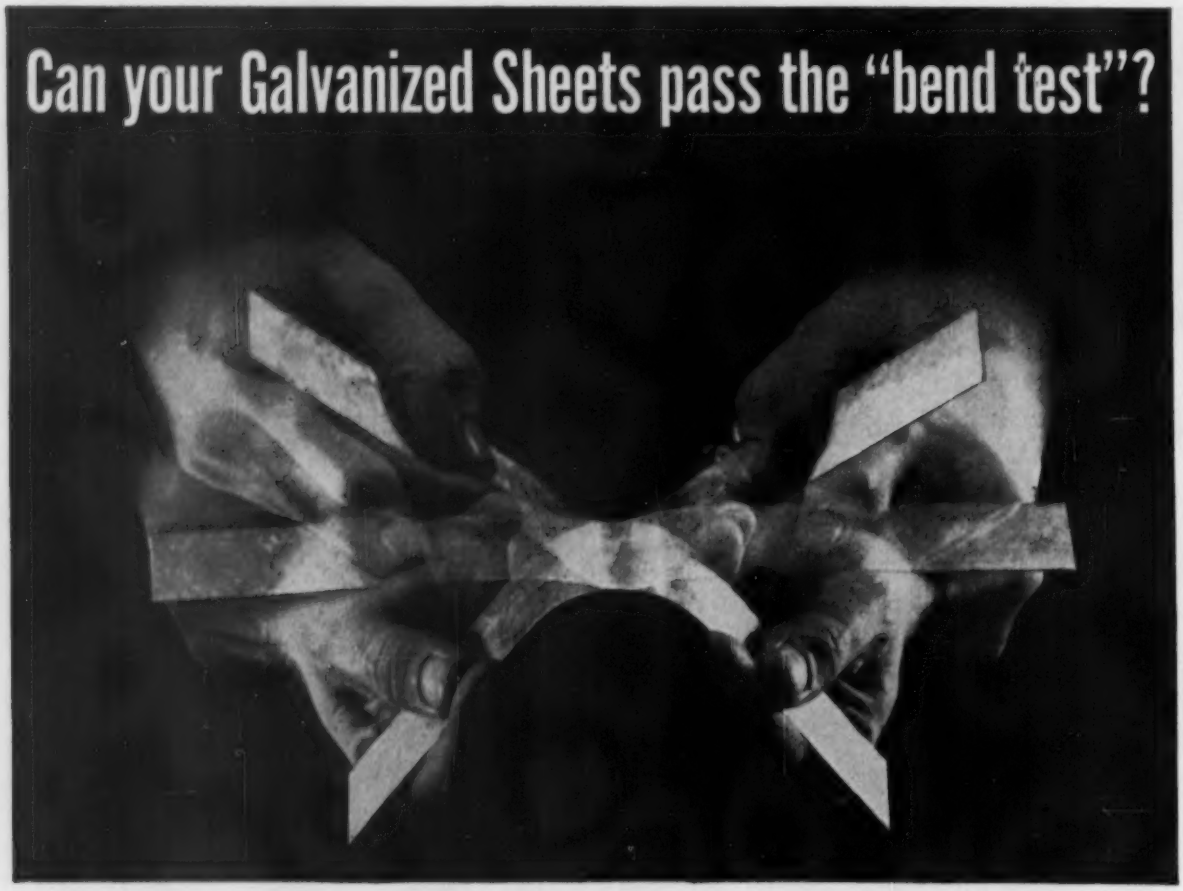
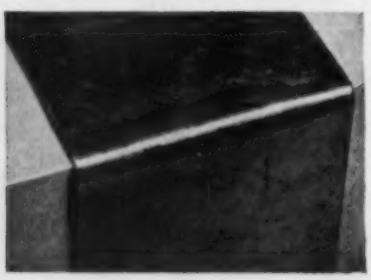
Can your Galvanized Sheets pass the "bend test"?



Just take a piece of the galvanized you're now using—bend it back and forth a few times. Do the same thing with a sample of Inland Ti-Co (which we'll gladly send you). Now look at the coating where the sheets were bent. We know the Ti-Co didn't flake—but did *your* galvanized? You can see for yourself why Ti-Co will improve your products, cut manufacturing costs and practically eliminate rejects.

Here are results of identical laboratory-controlled bend tests:

CONVENTIONAL "POT-DIP" GALVANIZED. *See where coating cracked and flaked off. Reason: brittle alloy layer which exists between zinc coat and steel.*



INLAND TI-CO. *No cracks or flaking after bending. Patented Ti-Co manufacturing process virtually eliminates brittle alloy layer, applies a tight zinc coat that withstands any forming that the base steel will take.*

Ordinary bending is probably the simplest forming your galvanized sheets will ever be called on to take. But the zinc coating on Inland Ti-Co will stand up under really tough punishment, too. You can lock-seam it, draw it, pound it, nail it . . . and Ti-Co's tough, tight, corrosion-resistant coating stays snug to the steel. Rust is sealed out!

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The Iron Age
FOUNDED 1855
TECHNICAL ARTICLES

Copper-lead mixture—

New Powdered Material Reduces Bearing Wear

◆ Can worn, corroded machine tool bearing surfaces be reconditioned while the machines run? . . . Security Engineering Co. does it by adding micro-sized particles of a copper-lead mixture to the regular machine lubricant.

◆ The treatment is standard maintenance practice for all of the firm's machine tools, old and new . . . Other uses for the powdered metal mixture include coolant additions for longer tool life; also to reduce wear in hydraulic valves.

By STANLEY HODGE, Manager, Tooling & Maintenance Dept.
Security Engineering Co., Whittier, Calif.

◆ THE FIGHT AGAINST machine tool friction is at best only a delaying action—an attempt to postpone the day when accumulated wear on friction surfaces finally demands that the "Down for Repairs" sign be hung up.

Security Engineering Co., Whittier, Calif. producers of oil field equipment, has found an ally in its constant battle to maintain smooth-operating, accurate machine tools. It's a finely powdered mixture of pure copper and pure lead. When used in either the dry form, or in a lubricant suspension, the company finds that these micro size particles effectively recondition worn, scored, and corroded bearing surfaces. Almost as impor-

POWDERED mixture painted on electrical universal chuck scroll cut power needed for tight grip.

WHEN added to the coolant, the copper-lead powder improved finish on drill bit threads.

"The powdered mixture fills metal pores and marred surfaces with a smooth coating . . ."

tant as the job the powder does is the fact that the treatment can be applied without dismantling production equipment.

For example, a 1933 model vertical turret lathe had a badly worn and corroded bearing surface on which the table rotated. The condition was so far advanced that it was difficult to operate the machine, even at low speeds.

Frees "sticky" clutch

In an attempt to remedy the situation, a quantity of the copper-lead powder was added to the regular lubricant. Very shortly the offending bearing surface was "built up" to a smooth, close-tolerance condition. The machine now starts and runs smoothly, and is once more an efficient unit on the production line.

In another case, the over-riding clutch on a cameograph profile machine was a constant source of trouble. It stuck persistently, and failed to give the necessary "free wheeling" action. By adding a few drops of an oil suspension of the powdered material to the clutch surface, the sticking problem was overcome.

Use of the micro-sized copper and lead mixture also improved the operation of an electrically powered universal chuck. For some time, this chuck had required the highest setting on its pressure dial to produce sufficient gripping power. But at this extreme setting, pinions broke continually.

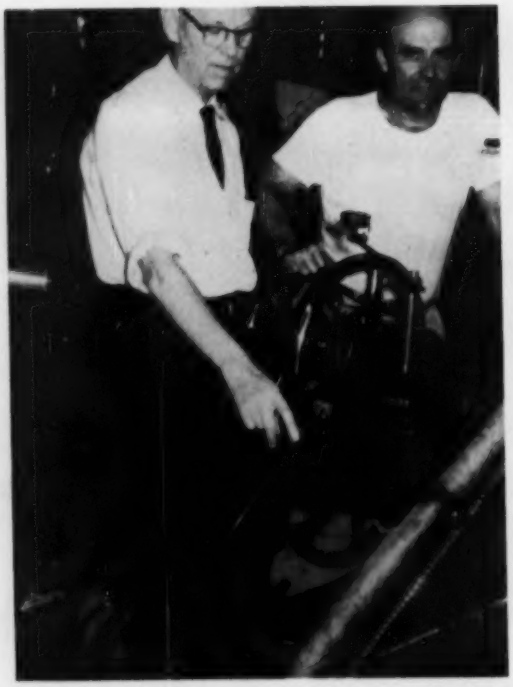
The solution was to paint the surface of the chuck scroll with the powdered mixture. The chuck now has sufficient gripping power with the pressure dial set at only the halfway mark. And there is no more trouble with broken pinions.

The material used in all of these applications is called Iso-Mite. It is a product of the Iso-Mite Corp., Los Angeles.

Powder helps three ways

Perhaps the most outstanding results with this powdered bearing mixture at the Security plant were obtained through a triple-purpose remedial treatment on a difficult thread milling operation. Beneficial effects were noted in three distinct areas: (1) tool life was extended appreciably, (2) a problem of motor bearing burn-out was eliminated, and (3) badly scored machine ways have been restored to mirror smoothness.

Basic difficulty with the 8-year old thread miller stemmed from its principal job of cutting joint threads on jet bit oil tools made from exceptionally hard metal. The threads are 6⅝ in., API regular, and to cut them properly formerly required from 3 to 5 passes.



WAYS on this thread miller became mirror bright with powdered mixture in the lubricant.

Excessive heating was an incident problem in this machining operation. It expanded both workpiece and thread gage to the point where it was impossible to check dimensions accurately.

A form of Iso-Mite powder known as Kut-O-Mite was added to the cutting oil; again immediate benefits were obtained. These tool joints are now precision threaded in just one pass, without excessive heating, and with a finely finished surface. In addition, tool life has been increased.

On this same machine, motor bearings regularly burned out 3 to 4 times a year due to the heavy load. To combat this problem, the regular powdered mixture was added to the bearing lubricant. In the 8 months since the additive treatment was started, no motor bearings have burned out.

The third area of use for the copper-lead powder on this thread miller involved the machine ways. After 8 years of service they were badly scored by cuttings. When the particle mixture was applied to these friction surfaces, they regained their original smoothness and now have literally a mirror finish.

Action of the micro-particles of this copper-lead mixture is to distribute themselves over a bearing surface, impregnating and filling the metal pores and any marred areas with a smooth, tenacious coating. In effect, the particles weld themselves to the base metal.

NEW machines get powdered metal added to regular lubricant, hydraulic oil, and coolant.

COPPER-lead particles reconditioned a wornout table bearing on a vertical turret lathe.

If friction forces become severe enough to dislodge any of the coating particles, those carried away will rejoin others in the lubricant stream and will eventually replenish the depleted area. Thus a "self-healing" action takes place continually.

Although copper and lead are virtually insoluble in the solid state, the producers of Iso-Mite claim to have overcome the normal tendency for the lead phase to segregate in the form of large "lakes" at the boundaries of the copper crystals. This is done by a special manufacturing process that produces a fine dispersion of tiny lead particles throughout the copper matrix.

By achieving this degree of lead dispersion, maximum benefits are said to be obtained from well-known properties of the two metals: (1) the lubricity of lead; (2) the ability of copper to dissipate heat rapidly.

Becomes standard practice

Due to the success Security Engineering Co. has had wit hthis method of reconditioning worn friction surfaces to proper clearances, the firm now uses the micro-powder material in standard maintenance practice on both old and new equipment.

One of the newest machines to receive this lubricant treatment is an Ingersoll Multi-Matic milling machine with fully automatic controls. Initially, some of the copper-lead powder was put into the hydraulic fluid. Here it is expected to maintain smooth, clean surfaces and proper clearances in hydraulic valves, cylinders and other parts of the system whose efficiency would be decreased by undue wear.

Lubricant for the head of the machine also carries a quantity of the powdered bearing material. And for longer tool life combined with cooler machining, the cutting fluid likewise circulates a semi-colloidal suspension of copper-lead particles.

From the firm's records of improved performance with older equipment, it is expected that these lubricant additive treatments will prolong peak operating efficiency of its new machine tools.

The firm's machine shop equipment includes turret and engine lathes, shapers, milling machines, internal and external grinders, boring mills, thread mills, and drill presses. All items must work efficiently to produce accurate, close-fitting oil field tools.

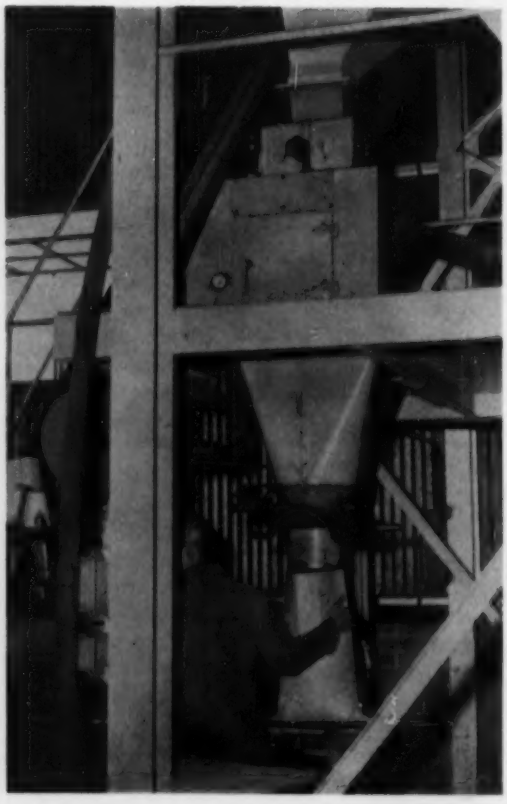
Security's 8-month experience with various Iso-Mite applications is not long enough for the firm to make a precise evaluation of the cost factors involved. However, it is already certain that savings are greater than any comparable maintenance material the company has used to date. Moreover, they greatly exceed the cost of the copper-lead mixture used thus far.

◆ Primary object of any bag loading operation is a quick, accurate fill with minimum spillage . . . Hoeganaes Sponge Iron Corp. does just this in filling 100-lb bags with iron powder used to coat welding electrodes.

◆ An automatic scale weighs and discharges the correct amount of powder every time . . . Weighing accuracy is within 1/4 of 1 pct . . . Filled bags move via conveyor to a machine that sews them shut.

Insures correct weight—

Automatic Scale Speeds Packaging Operation



◆ FOR MORE SPEED and accuracy in packaging 100-lb bags of iron powder, the Hoeganaes Sponge Iron Corp. recently coupled automatic weighing with fast-acting bag filling and closing equipment at its Riverton, N. J., plant.

With this new arrangement, 6 to 8 bags of welding rod coating material are filled and sewed shut in the time formerly required to process 2 to 4 bags by manual methods. An automatic scale, designed and built by the Richardson Scale Co., Clifton, N. J., paces the entire operation. It weighs the correct amount of powder and fills the bags as fast as the operator of the packaging setup can work.

"Waiting time" is completely eliminated, and there is no cause for any delays such as might occur in setting or adjusting beam weights on a manually operated scale.

Accurate weight means savings

Greater accuracy of the automatic scale also brings additional savings. One out of every 30 bags is regularly spot-checked by weighing it on a platform scale. Experience shows the new unit to be consistently accurate to within plus or minus ¼ of 1 pct. This means not more than a 4-oz variation in every 100-lb bag filled and weighed.

With a manually operated scale, some operators may be inclined to set the scale on the heavy side to avoid a short weight. This could easily mean losing as much as 8 oz per 100-lb bag, depending on the operator and the speed required of him.

Construction features of the scale include the use of type 430 stainless steel to offset abrasion wherever there is contact with the iron powder. The dust-tight design also prevents the escape of the 40-mesh material, which is dry, cool and free-flowing.

The scale is air-operated with air supplied by an Ingersoll-R and single-stage compressor. A 1-cu ft weight hopper, part of the overall scale unit, will accept only one 100-lb batch of the iron powder at a time. The 8-in. diam hopper outlet is positioned above a manually operated universal bag holder that takes 17-in. wide heavy-duty paper bags.

The Richardson firm also supplied the bag-closing equipment. This includes a foot-controlled belt conveyor; an automatic bag stop; and a Union Special sewing pedestal and head, complete with tape reel assembly and automatic tape cutter.

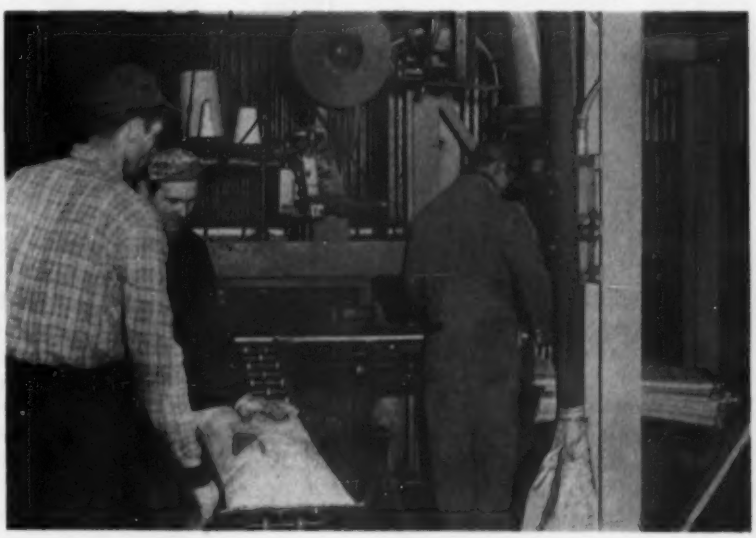
From storage, iron powder to be weighed and bagged first passes through vibrating screens and then enters a large equalizing hopper above the scale. From this bin, the iron powder feeds into the weigh hopper of the scale itself. The overhead supply bin has a flow control switch to protect the scale against a shortage of material, and there is a bypass switch to empty the bin when necessary. The catch gate is operated by air.

One man handles the entire bagging and sewing operation. To begin the process cycle, the scale automatically weighs and holds 100 lb of iron powder required to fill a bag. When the operator puts a bag on the hand-operated bag holder, the powder discharges automatically into the bag. Whenever higher speeds might be required, the bag holder can be air-operated.

As soon as one bag is filled, the scale automatically weighs out another 100 lb load. Meanwhile the operator directs the filled bag to the sewing machine via the foot-controlled belt conveyor. He guides the bag through the taping and stitching operation, which ends automatically when closure is complete. Bags are then ready for storage or shipment.

◀ Far Left: FILLED bags move via belt conveyor to the sewing head where they are taped and stitched.

◀ Left: SQUARE hopper of automatic scale holds exactly 100 lb of iron powder to fill bag below.



▶

Right: AFTER they are sewed shut, bags are carried by roller conveyor to the pallet loading area.

Lower inventories—

Integrated Fastener Setup Shortens Delivery Time

◆ Faster handling of special orders, lower inventories and metal costs are advantages gained by H. M. Harper Co. from an integrated setup for producing fasteners . . . Ferrous and nonferrous billets are cast from induction furnaces, extruded into bar, rod and wire on a 1650-ton press . . . Extrusions are then drawn to size for fastener production . . . The installation also provides an assured metal source during tight demand periods.

By E. C. BEAUDET, Technical Editor

◆ TO THE BUYER an integrated setup for making bolts, nuts, screws and other fastenings means faster delivery on specialty items. To the producer it has this advantage and many more.

At H. M. Harper Co.'s Metals Div., equipment for turning out fastenings from the molten metal to the finished product permits lower inventories of bar, rod and wire, reuse of plant-generated scrap and closer quality control.

Major advantage is an assured source of material for quick service on special orders and when brass, bronze, aluminum and steel alloys are in short supply. The setup also permits savings in metal costs.

To obtain these benefits the company has installed equipment totalling about $2 million at its Morton Grove, Ill. plant. This includes 4 induction melting furnaces, an extrusion press for both nonferrous and stainless steel material, induction billet heating equipment, wire drawing and heat treating facilities.

Quality control of the operation starts in the melting department. Most billet production is in 65-35 brass, silicon-bronze and type 304 stainless steel.

Two of the induction furnaces are low frequency units which melt at a rate of 800 lb per hour on high copper alloys. The other, a 350 kw high frequency induction furnace is used for melting stainless and other alloys. Power to both furnaces is supplied by a motor generator set consisting of a 500 hp synchronous motor which operates from a 4160 v, 60 cycle, three-phase power line.

For stainless steel conventional melting practice is used. About fifty pct of each heat is in-plant generated scrap. The rest is ingot iron, nickel and ferrochrome, with ferro-manganese, ferrosilicon and calcium silicon used as alloying agents and deoxidizers.

High alloy recovery

Melting time for a 1000 lb charge of stainless steel is about an hour. Pouring temperatures of about 2920°F are controlled at the furnace with a platinum 13 pct rhodium thermocouple.

Alloy recovery averages over 95 pct. Melt chemistry is controlled by spectrographic and wet chemistry methods on both steels and copper alloys.

The ingot or billet mold in which steel is cast is unusual. It consists of a simple hollow cast iron cylinder which rests on a copper stool. An exothermic type sleeve or baked sand core is used for a hot top. Since the mold has no taper, billet yield is 85 to 90 pct when good hot top and pouring practice is used.

INDUCTION melting furnace casts silicon bronze billets. Metal is poured into water-cooled mold.

BILLETS are surface-conditioned and nose-radiused on this automatic lathe before extrusion.

PRESS and induction heater form compact setup. Transfer from billet heater to extrusion press takes about twelve seconds.

POSITIONING of heated billet and press operation is controlled from this panel. Billet is in cradle ready to be pushed into container.

This type of mold also produces, a billet which requires a minimum amount of surface conditioning. Before extrusion the billet is turned and nose-radiused on a high-production automatic lathe. After conditioning, billets are transferred to Magnethermic induction heating equipment.

Loading into the induction heater is by an overhead crane and grab capable of carrying 10 billets at a time. Coils on the unit are arranged vertically and fed by three individual ramps equipped with up enders, elevators and kickoffs.

After the billets are loaded, heating and discharge are under the control of the press operator. The hot billets are delivered to the press by a pallet-type conveyor provided with a kickoff at its terminal end.

Billet heating is controlled by Rayotubes and timers each capable of interrupting the other. The timers for each coil consist of two units,

HOT WIRE from runout table is coiled on rotating drum. Action is controlled by foot pedal.

"Glass lubricant remaining in the container after steel extrusion is removed by an automatic brushing device which brushes the liner and ejects loose glass fragments by air . . ."

a basic period timer and a cycler which can be set to duplicate the performance of the temperature controller. The latter is determined by trial and error.

Depending on billet size which varies from 5.1 x 11 in. to 6 x 22 in. the time to heat various alloys is as follows: brass to 1275 to 1425 deg F—1.5 to 3 minutes; silicon bronze 1425 to 1500 deg F—1.7 to 3.7 minutes; and 304 stainless 2100 to 2250 deg F—3.5 to 5.5 minutes.

Press has versatility

The extrusion press is the heart of the operation. It is a 1650-ton, 4 column horizontal rod press built by Hydropress. It was designed to extrude both nonferrous material and steel at high speeds, by the Sejournet process.

Silicon bronze billets 5.1 x 11 in. are extruded into 100 ft rods of 0.420 in diam. This 160 extrusion ratio can be surpassed should the need arise. Some rods have been extruded up to 1.500 in.

On type 304 stainless steel, 5.1 x 16 in. billets are extruded to 9/16 in. rod in 100 ft lengths and also up to 1.500 in. diam rod.

The extrusion press has a good deal of versatility in its ability to switch from one type of material to another. Little time is required, for example, to convert the press from ferrous to copper alloys except for a few minutes to change tap settings on the billet heater and change the glass on the billet loader. Minor cleaning of the container is also necessary when switching from the glass process to nonferrous production.

Automatic device brushes liner

When a billet size change is required the changeover takes about six hours. This is needed to change stems, containers and coils on the billet heater, heat the container and adjust the billet loader.

The extrusion press is used solely for rods and shapes. Since no tubes are produced, it is possible to use a die slide which translates between the fixed platen and the container. This eliminates difficulties sometimes encountered with conventional presses when attaching a runout table.

The glass lubricant remaining in the container after steel extrusion is removed by an automatic brushing device which brushes the liner and ejects loose glass fragments by air.

Handling from the time the billet leaves the induction heating unit to loading in the press takes 12 seconds. This fast delivery minimizes local chilling and oxidation. In its extended position the billet loader completes a ramp on which the billet travels over powdered glass to the center line of the press to be loaded.

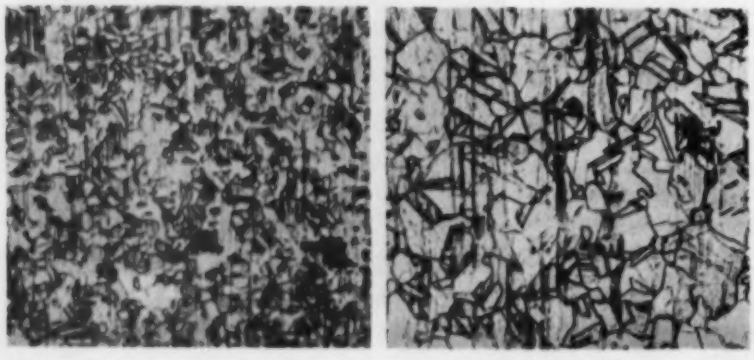
In general the yield point of the extruded material tends to be directly related to extrusion ratios and temperatures. The extrusion of small ingots produces a rod with exceptionally uniform grain size which is said to be smaller than the comparatively nonuniform grain of hot rolled material.

Stainless output will increase

Although present production on stainless rods is in the minority, the bolt plant of H. M. Harper usually runs about 70 pct copper base alloys to 30 pct stainless steel.

In September a new furnace will be installed in the melting department which will bring ingot production up to this ratio. Later extruded shapes will be produced and stainless production will assume the major portion of billet production.

After the coils or cut lengths of wire and rod are drawn to size, the extruded material is ready for processing into fastenings.



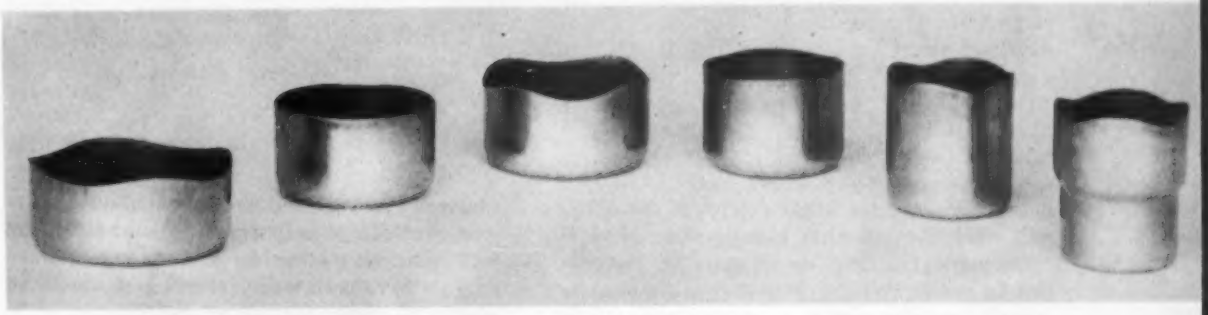
MICROPHOTO of extruded 304 stainless, left, compared with hot rolled 304 stainless. Extruded material is 0.56 in. diam from 5.1 x 16 in. billet. Rolled product is 0.5 in. diam. 100X

Part II *Draw, machine or weld—*

How to Work Arc-Cast Molybdenum

◆ Good high temperature properties of arc-cast molybdenum and arc-cast molybdenum alloys can be obtained through use of proper fabricating techniques . . . High speed steel and tungsten carbide tools have given good results in machining.

◆ In drawing and spinning, both metal and tools should be heated . . . Satisfactory welds are obtained using arc, electrical resistance, percussion and flash welding . . . Special care is needed in grinding.



MOLYBDENUM sheet (0.025 in.) and tools were warmed during drawing to produce these shells.

◆ STANDARD METHODS, modified slightly to suit the special requirements of molybdenum, are successfully used to fabricate arc-cast molybdenum and molybdenum alloys. These methods, used to work the arc-cast metals produced by Climax Molybdenum Co., yield parts with the outstanding high temperature properties typical of molybdenum and its alloys.

Except with very small sizes, molybdenum can be heated for working to about 700°F in air without excessive oxidation if the heating time is not too long. Hot oil is recommended as a heating medium when molybdenum sheet is heated in this temperature range for deep drawing.

When temperatures over 700°F are needed, a controlled-atmosphere furnace, a salt bath or induction heating may be used. The controlled-atmosphere furnace may be operated with a vacuum, an inert gas, or a slightly reducing atmosphere. It is best to place the molybdenum on a stainless-steel plate to avoid contact with slag or the furnace bottom. Molybdenum requires about a fourth as much time to come to heat as carbon steel.

Swaging and hammer forging can be done by conventional methods; but not too much deformation is possible in one heat due to rapid cooling. Molybdenum is much more resistant to deformation than steel at the same temperature, so more powerful equipment is needed. Air cooling after forging is desirable to avoid unnecessary oxidation.

If mechanical properties are of no interest a temperature of 2600° to 2800°F is preferred as the molybdenum is easier to work at these high temperatures. There is no danger of over-heating in controlled atmospheres; this may not be true in air.

If optimum strength and ductility are desired, forging and reheating temperatures must be controlled to provide for at least 50 pct reduction by warm work below the recrystallization temperature. Reductions of as much as 90 pct have been made without difficulty. Unalloyed molybdenum may be forged at tem-

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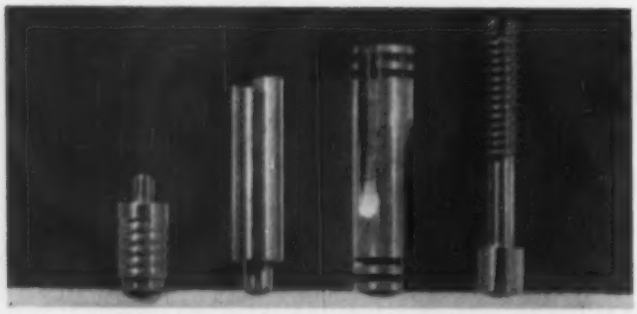
This, the second of two articles on arc-cast molybdenum and arc-cast molybdenum alloys, describes methods used to fabricate the metals. Part I, dealing with properties of the arc-cast metals, appeared in last week's issue of The Iron Age.



SMALL, FINELY MACHINED molybdenum parts were produced using conventional machining methods.

ARC WELDED 6 in. diam nozzle has conical sections, flange. Critical dimensions are held by sizing this Curtiss-Wright part after welding.

peratures down to 1700°F; most of the alloys will crack if much work is done under 1900°F.

Ordinary cleaning or degreasing methods can be used. Pickling is seldom a problem as metallic molybdenum is normally free scaling. Vapor or grit blasts remove an oxide coating easily. Oxide coatings may also be removed with a molten-caustic bath. Good results have been obtained with a bath consisting of 90 pct potassium hydroxide and 10 pct sodium nitrite at 600°F. A thin oxide film may be removed in a hot 10 pct solution of caustic soda in water.

Keep dies and tools warm

Hydrogen firing is often used to provide chemically-clean components as hydrogen reduces molybdenum oxides. Pure dry hydrogen is preferred, but dissociated ammonia may be used if no further forming is to be done. Parts are heated to about 1500° to 1800°F for 10 to 30 minutes, then cooled in the same atmosphere.

Parts can be made chemically clean with the hot chromic-acid solution commonly used for cleaning glass. When molybdenum parts must be grit blasted, steel grit is recommended. After blasting, parts are thoroughly cleaned in hydrochloric acid to remove steel particles.

In sizes under about 0.020-in. diam or thickness, forming, bending and shearing can be done at room temperature. Molybdenum sheet in these thicknesses will take a 180° bend without difficulty. Heavier material should be warmed to 200° to 1000°F, depending on size. Good practice is to keep dies and tools warm. Infrared lamps are a suitable heating means. Punching or shearing dies should be kept sharp to avoid cracking the molybdenum sheet. Molybdenum can be deep drawn without difficulty; wall reductions of as much as 22 pct between anneals have been made. Heating of sheet and dies is recommended for all gages.

Aluminum bronze or other material with a low coefficient of friction is the preferred tool material. Steel dies may be used if well lubricated. Rubber or pneumatic cushions may be applied where required. For experimental work, low-melting alloys are satisfactory. Drawing should be done at the slowest rate feasible. Castor oil or highly chlorinated oils are suitable lubricants.

Molybdenum can be spun with aluminum bronze tools. Cross-rolled sheet is generally used to avoid directionality. Extremely light gages (under 0.020 in.) can be spun at room temperature, but it is better to heat both work and tools. In spinning sheet up to 0.032-in. thick a small gas flame is usually played on the material during working to raise the temperature to about 200° to 400°F.

Unalloyed molybdenum as-cast and after hot working has hardness ranging from 196 to 275 Bhn, and generally about 200 to 220 Bhn. At these hardness levels, it is considerably more abrasive than steel so more rapid tool wear can be anticipated in machining. Prior heat treatment has little effect on machinability.

Molybdenum saws readily with high-speed-steel band or hacksaws. Lower speeds should be used than for a steel of the same size and hardness. No coolant is necessary. Flame cutting is not satisfactory. Warm shearing is satisfactory for sizes up to 0.050 in. Heavier sheet or plate should be edge machined.

For rough, heavy machining, high-speed-steel tools give best results. A generous positive rake with the point higher than the shoulder is preferred. Satisfactory cutting speeds are in the range 45 to 55 fpm, with feeds of 0.010 to 0.020 ipr and depths of cut up to ¼ in. Usually no lubricant is used.

For finish turning, general-purpose straight tungsten-carbide tools are most suitable. A 50-50 mixture of a chlorinated oil and trichloroethylene or highly chlorinated oil is recommended. A cutting speed of 25 to 50 fpm can be used with a feed of 0.002 ipr.

With high speed steel tools, shaping is preferred to milling as shaper tools last longer and are easier to regrind. Tools should have a generous positive rake.

Excellent results have been reported for milling with carbide-tipped cutters. Speeds of 110 to 130 fpm may be used for roughing with depths of cut up to 0.050 in. and 350 to 400 fpm with 0.003 to 0.015 in. for finishing. Conventional carbide-tipped face mills of the design normally used for cast iron are suitable for face milling.

In drilling, the lower expansion of molybdenum makes it particularly important to keep the drills sharp and cool. Recommended speed of 25 fpm and feed of 0.005 ipr should be used. It is worth-while to regrind drills frequently to avoid difficulty and delay from binding. Two-lipped carbide-tipped drills may also be used. Special precautions are necessary with deep holes because of the rather abrasive chips.

Use standard buffing practice

Molybdenum is difficult to grind. In general, cracking may occur with cuts lighter than 0.0005 in. An ample supply of proper coolant is recommended to avoid burning. A 60 to 1 mixture of soluble oil is generally satisfactory. A wheel speed of 6000 sfpm and table speed of 50 fpm are recommended for surface grinding. For cylindrical grinding a wheel speed of 6500 sfpm and work speed of 100 sfpm are recommended. Standard buffing practices give a highly polished surface, which has reasonable permanence.

Molybdenum can be welded to itself and to metals and alloys with which it readily alloys using arc, electrical resistance, percussion and flash welding. In all cases, absolute cleanliness of the molybdenum is essential. Satisfactory mechanical joints can be made by riveting and use of lock seams.

The most satisfactory welds in heavy sheets and parts are probably those made with atomic-hydrogen or inert-gas-shielded arc with tungsten electrodes, with or without filler-wire additions. Manual-arc welding is not feasible.

Precautions must be taken against the presence of oxygen. Welds are subject to cracking if the oxygen content of the argon atmosphere exceeds 0.2 pct while ductility is drastically reduced by more than 0.05 pct oxygen.

A preheat at 400°F has been reported to give favorable results but is not always necessary. Filler wire lessens the need for highly accurate fitting of details and reinforces the weld, which is particularly desirable for parts to be stretched or formed after welding. Filler wire of unalloyed molybdenum or the 2 pct W alloy has shown the most promise. Corner or edge welds are generally easier to make than butt welds; butt welds are generally simpler to produce than fillet welds.

Use these cleaning solutions

Resistance welding of small molybdenum electrical parts has long been done commercially. AC or DC welding equipment may be used. A condenser-discharge type welder, or an ignitron type with ½ cycle timer has been satisfactory.

If design permits, one of the sheets to be joined by projection welding should be dimpled or sandblasted. In spot welding, surfaces of both sheets should be etched by immersion for 10 seconds at 195°F in a solution containing 5 gal of concentrated sulphuric acid, 375 g of chromic acid, 1 qt of hydrofluoric acid, and 0.1 qt of concentrated nitric acid. Sheets should then be dipped in a hot chromic-acid glass-cleaning solution until the oxide disappears.

Molybdenum can be brazed with a variety of metals and alloys. Brazing mediums must be selected carefully when parts are to be given a protective coating, as temperatures involved in the latter operation are above the melting point of some of the brazes.

Where high service temperatures are not involved, copper (melting point 1981°F) or silver brazing alloys are usually chosen. A silver brazing alloy with 50 pct Ag, 15.5 pct Cu, 15.5 pct Zn, 16 pct Cd and 3 pct Ni (melting point 1195°F) has given excellent service in brazing electric and electronic parts. Addition of as little as 0.25 pct P to silver brazing alloys produces a marked improvement in the wetting of molybdenum surfaces, but about 1 pct P is required for maximum joint strength.

For non-structural applications involving temperatures above the melting point of either copper or silver brazing alloys, nickel (melting point 2651°F) and platinum (3224°F) are used, generally in the form of foil.

Many brazing materials have been tried for high temperature structural applications. A nickel chromium boron alloy (AMS 4775) is suitable for service applications up to 2000°F; it is satisfactory for hydrogen brazing but not for brazing in vacuum. Silver palladium and palladium iron alloys have given good results in vacuum brazing but are not recommended for hydrogen brazing.

On large transformers—

Switch to ALUMINUM Overcomes Design Problems

◆ Steel is satisfactory for end frame construction in small transformers . . . In large transformers, its use results in excessive eddy current losses unless it is shielded, adding extra weight to the assembly . . . Aluminum eliminates these losses and reduces weight.

◆ By using plate sections thicker than those required for steel, adequate strength and rigidity are acquired . . . The alloy selected has high initial strength in the as-rolled condition and good weldability.

By S. S. STENERSEN, Transformer Section, Allis-Chalmers Mfg. Co., Milwaukee

◆ AS POWER TRANSFORMERS have increased in size and capacity, so have the problems in selecting suitable materials. On large transformers, for example, eddy current losses in the magnetic steel end frames next to the coil become excessive. One way to reduce these losses is to place a shield of laminated core steel between the coil and the end frame. Another is to make the end frame of nonmagnetic material such as aluminum. The latter remedy not only eliminates the necessity for core steel shields, but reduces transformer weight substantially.

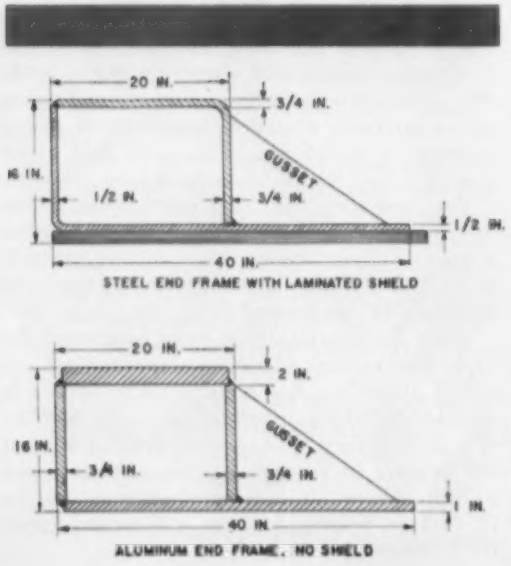
End frames are the structural members which clamp the coil, insulation and core laminations into a compact unit. They must be sufficiently strong and rigid to withstand pressures exerted by the coils, and provide for convenient handling both during and after assembly. Some end frames are box shaped and others are flat plates reinforced with ribs.

Selecting aluminum of proper composition and temper is important. The alloy must have as high tensile and shear strength as possible. It must also have good weldability, and an initial temper which will not change appreciably during welding because the welds and adjacent areas are highly stressed in service. Another consideration is that the alloy selected must be commercially available in the sizes required.

An alloy of moderately high initial strength in the as-rolled condition was selected. Compared to mild steel, it has about 40 pct the elastic limit, 50 pct ultimate tensile strength and 33 pct modulus of elasticity. Weld strength is about the same as that of the base material.

In deciding to use an aluminum alloy, there was a problem of design. The end frames must fit in a limited space between the coils, core and surrounding tank wall. In addition to the space limitation, the frame must be sufficiently strong and rigid with a minimum of mass.

Since aluminum has less strength and rigidity than steel of a given cross-section, plates would



Left: COMPARATIVE cross-sections of steel and aluminum end frames show the thickness of component plates required to give equivalent strength and rigidity in a large transformer.

have to be thicker. However, the variation of individual plate thicknesses in an aluminum end frame gives better mass distribution.

Before setting up manufacturing procedures, an investigation was made to determine which welding process would be most practical from a production standpoint. The inert gas-shielded metal arc process proved most satisfactory for this purpose. It requires no corrosive flux, little or no cleaning is necessary, preheating would be eliminated and the rate of metal deposition is high.

Four-plate construction better

Argon is used as the inert shield around the rod and weld metal. The wire used is 3/32 in. in diam and has the same composition as the base material. The ½ and ⅝-in. fillets are made in two layers—a stringer pass for good fusion at the root followed by weaving a second pass for adequate buildup. Highly satisfactory welds are obtained with the following conditions: wire feed, 120 ipm; welding current, 200 amp; argon flow, 80-90 cfh.

All-welded end frame construction may be of either two or four aluminum plates. In two-plate construction, each plate is prebent to an L shape and only two longitudinal welds are required as opposed to four in the four-plate construction. However, constructing the end frames from four plates allows greater freedom of mass distribution, an important advantage when using aluminum.

The comparative weights and costs for aluminum and steel end frames are given in the table. The figures are expressed in percents, based on the weight and total factory cost of aluminum end-frame construction.

The steel end frame without a shield is the least expensive. This construction is used on smaller transformers where weight is not important and eddy current losses are not excessive. The next heavier class uses a steel end frame with a solid aluminum plate as a shield between the end frame and the coil. The end frames on heavy transformers, where weight and eddy current losses would both be excessive, are made of aluminum. No shield is necessary. This type of construction is about 40 pct the weight and 83 pct the cost of a steel end frame with a laminated core steel shield.

ALUMINUM end frame used in this 150,000 kva transformer eliminates eddy current losses and reduces the overall weight substantially.

The use of aluminum also offers other advantages. Shot blasting and painting, required for steel, is eliminated entirely. Aluminum end frames are easily brushed or wiped off after welding.

From the standpoints of cost and weight, aluminum end frames have proved to be most practical to manufacture for use on the largest transformers. Until recently, as many as 56 such large aluminum end frames were designed and fabricated. In service, all have performed satisfactorily.

TABLE **Comparative Weights and Costs**

	Weight, pct	Cost, pct		
		Material	Labor	Total
Aluminum end frame	100	87	13	100
Steel end frame	149	20	6	26
Shield	86	30	64	94
Steel end frame and shield	235	50	70	120

Random orientation—

Can Controlled Temperature Rolling Improve Drawability?

◆ Deep drawing stainless sheet can be a problem . . . The preferred grain orientation resulting from cold rolling makes it even tougher.

◆ Suggested solution is controlled temperature rolling . . . This process rolls sheet at 500° F and produces a random orientation . . . Transverse and longitudinal properties are more compatible and improved "drawability" is the result.

By N. P. GOSS,
Consultant
Cleveland, Ohio

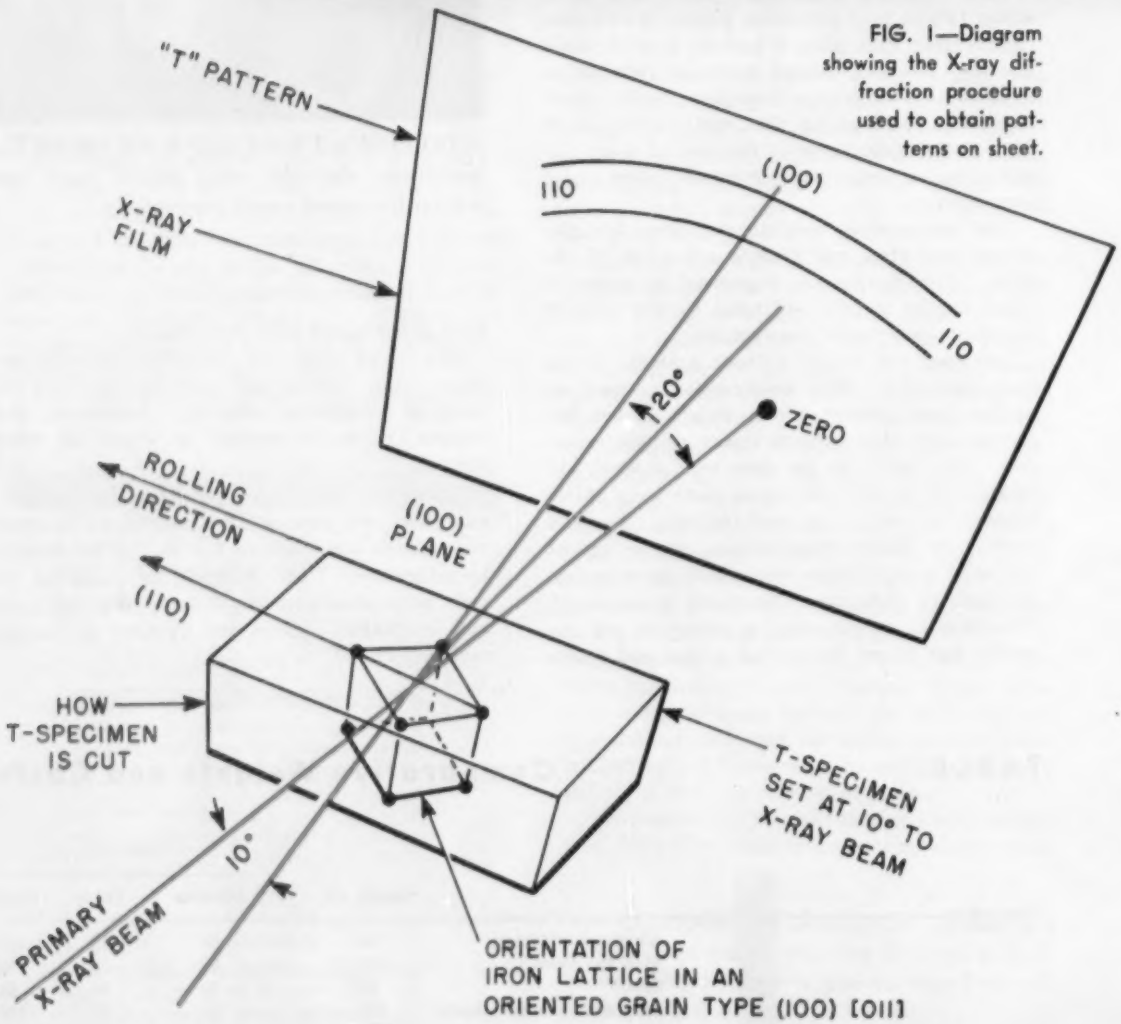


FIG. 1—Diagram showing the X-ray diffraction procedure used to obtain patterns on sheet.

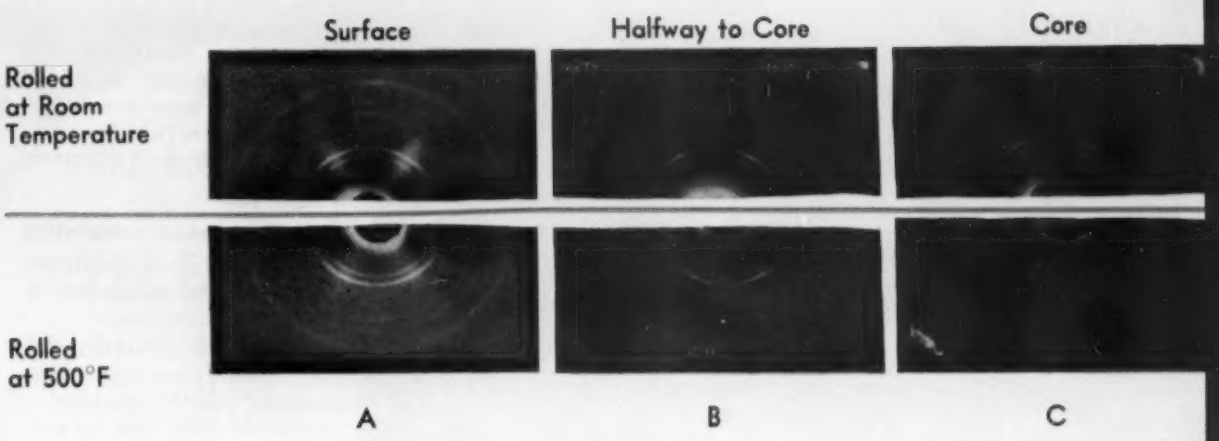


FIG. 2—Actual diffraction patterns obtained on 410 sheet rolled at room temperature and 500° F. Patterns at bottom half show weaker intensities indicating random orientation.

◆ CONTROLLED TEMPERATURE rolling may well produce a 410 stainless sheet with better deep drawing properties than those obtained by conventional cold rolling. The resulting improvement is attributed to the effect of temperature on the deformation texture of the material. This is reflected in changes in X-ray diffraction patterns.

Rolling 410 stainless sheet at a controlled temperature (500°F) results in the development of a "random" texture as opposed to the "fibered" condition normally experienced. The random texture could provide the means for getting better deep drawing properties. It could also reduce, or even eliminate, the adverse effects upon transverse properties characteristic of standard rolling techniques.

The mechanics of grain distortion during rolling are a significant factor. The grain fragments of a material developed by deformation are orientated when progressively cold rolled to form sheet or strip.

The rolled metal usually experiences an improvement in properties in the direction of rolling or cold working. This is attributed to the grain elongation in the rolling direction noted in the annealed material after rolling.

Unfortunately the transverse properties of rolled materials are adversely affected by the same preferred grain orientation that tends to improve longitudinal properties. The variation in properties as a function of grain orientation has always been a major problem in deep drawing operations. This is due to the fact that the elongation characteristics upon which "drawability" depend, are not comparable in the longitudinal and transverse directions.

The effect of rolling temperature on certain properties can be highly significant. It has been shown that increasing the rolling temperature results in changes in slip mechanism. A recent investigation* showed the effects of rolling temperatures in the range of 32°-800°F on the orientation texture of low carbon steel strip.

The degree of preferred orientation increased as the temperature of rolling was lowered below room temperature, according to these tests. At higher temperatures (700°-800°F) a new orientation texture of the type (110) [001] was developed. Rolling at 350°-500°F produced random orientation. This range apparently produces a transition or transformation of the (100) [011] and (110) [001] textures.

These tests proved that the control of preferred orientation could be accomplished by controlled temperature rolling. They also showed that a completely random orientation texture could be developed in cold reduced metal by the application of proper temperature and rolling conditions.

Further investigations tend toward the con-

*N. P. Goss, "The Effect of Temperature on the Rolling Texture of Plastically Deformed Low Carbon Steel Strip," ASM *Transactions*, Vol. 45, 1953.

clusion that the orientation texture in rolling is largely temperature dependent. Other factors such as tension, roll diameter, reduction per pass, and reversal of direction appear to have far less effect on texture than the temperature at which the metal is plastically deformed.

The 410 stainless material was chosen for test because it does not have the benefit of an allotropic transformation. Diffraction studies indicate that 410 hot-rolled strip is already highly orientated prior to rolling. The orientation texture developed in rolling is very difficult to alter unless processing procedures are able to hold it within the desired limits.

The stainless strip used in this investigation was 0.018 in. thick in the annealed condition. It was cold reduced 50 pct to a thickness of 0.009 in. The rolling was done in a small two-high laboratory mill fitted with bearings that could operate at temperatures up to 700°F.

Sample strips were rolled at room temperature and 500°F. Systematic checks of roll and strip temperatures were made in order to assure the maintenance of temperature uniformity at the desired level.

X-Ray patterns studied

Samples subjected to diffraction analysis were cut from cold-rolled strip in the manner shown in Fig. 1. Intensities of orientation were measured at the surface, midway to the core, and at the core. The "scatter" about both the longitudinal (rolling) and transverse directions was also determined.

X-ray diffraction patterns were taken of the samples using the "reflection" method. This method has several advantages over the transmission method since it requires no special preparation other than a possible surface etch of the sample. The absorption of the X-rays by the sample definitely determines the thickness of the sample examined.

In this method of obtaining a diffraction pattern, a well-defined X-ray beam is incident on the surface of the sample at the Bragg angle ($\theta = 10°$) for an important atomic plane. Two 0.040 in. diam pin holes spaced 10 cm apart were used to define the beam.

The plane of the incident and the reflected X-ray beam was normal to the rolling direction. The incident beam made an angle of 10° with the surface of the sample. This arrangement is known as the transverse direction and is sometimes designated by the symbol T-10.

The diffraction pattern obtained from this arrangement shows a higher degree of preferred orientation than in either of the so-called parallel (P) or normal (N) directions. It is the most informative arrangement for the study of preferred orientation.

"P" and "T" specimens were etched in aqua-regia on one side in order to obtain X-ray patterns at the midsection and core. Depths of etching were 0.006 in. and 0.0045 in. respectively. All diffraction effects were recorded on Eastman X-ray film placed 5 cm from the specimens. Exposure time was held constant throughout the tests.

Shows random orientation

A complete analysis of the zonal orientation texture required 12 X-ray diffraction patterns, 6 each for the "P" and "T" directions.

Fig. 2 compares some of the diffraction patterns obtained. The patterns show that rolling at a higher temperature (500°F) produces a weaker orientation texture. This can be seen by the noticeably weaker intensity of the arc or arcs presented in the pattern. On the positive side, high temperature rolling also provides a more random orientation.

Most significant is the fact that these characteristics are not simply superficial. The evidence shows that they extend to the core material as well as the surface.

In order to double check these results, core samples were examined on the same pin hole and exposures made on the same film under identical conditions. This procedure allows a direct comparison of the X-ray patterns obtained.

Knoop hardness tests were run on samples rolled at room temperature and at 500°F. The results show that rolling at a higher temperature had only a slight effect on hardness. Hardness was increased from KHN 469 to KHN 525. This change is not considered to be significant.

The principal significance of the tests centers about the improved formability and the adaptability of rolling equipment to roll sheet at approximately 500°F. Adaptability of present equipment appears to be quite feasible.

Prior to the development of the four-high mill, cold rolling was performed on two-high mills operated at low rolling speeds. The two-high mills were seldom operated at speeds exceeding 300 rpm. The rolling temperatures never went above 200°-250°F. Efficiency was marginal.

The modern four-high mill can roll strip at speeds as high as 5000 ft per minute. In the case of stainless steels, temperatures as high as 600°F may be reached on the finishing passes. Normal operating temperatures are in the range of 200°-300°F.

At present every effort is made to run the mills at as low a temperature as possible. The important advantages of warm rolling should reverse this tendency.

To do the job effectively would require the modification of present equipment. Materials capable of continuous operation at 500°F would have to be used for some components.

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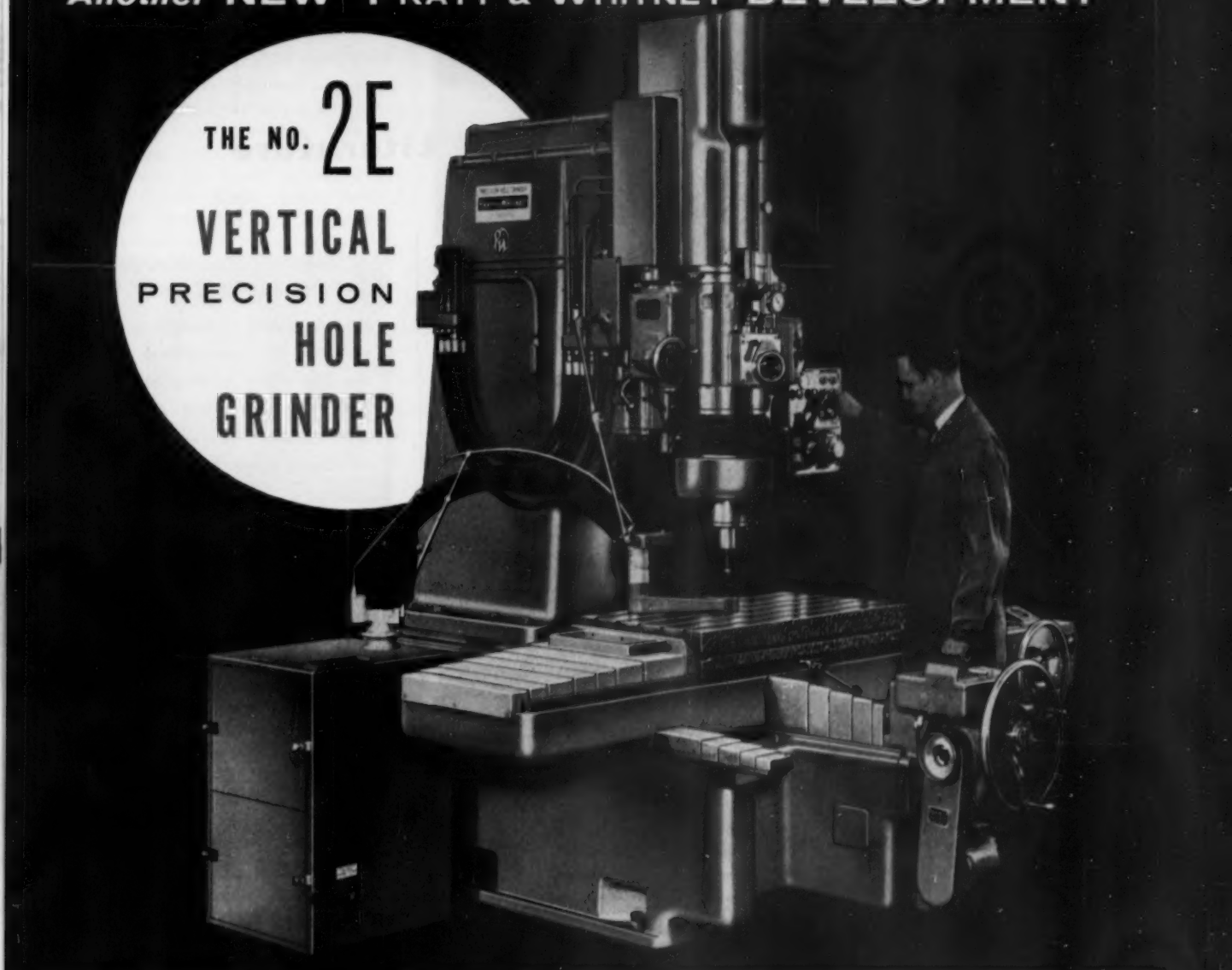

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New Technical Literature

Catalogs and Bulletins

Air conditioning

Central-station, cabinet type air conditioning units are described in a 20-page catalog. Profusely illustrated, it describes three types of air conditioning units for industrial and commercial applications. Ten pages are devoted to tables and graphs that enable heating and ventilating engineers and contractors to determine the exact type of unit which will meet individual job requirements. *American Blower Corp.*

For free copy circle No. 1 on postcard, p. 109.

Automatic torque control

A booklet describes the Mercury clutch as to: how it works, versatility, specific clutch recommended for either gasoline engines or electric motors. Overall dimensions of each clutch model, including pertinent data for the pulley or coupling indicated are contained in a chart. *Mercury Clutch, Div. Automatic Steel Products, Inc.*

For free copy circle No. 2 on postcard, p. 109.

Contract machining parts

A service of contract machining parts to Nth degree precision, under statistical quality control methods, is outlined in an illustrated bulletin. Advantages of this method for better production control are explained. *American Non-Gran Bronze Co.*

For free copy circle No. 3 on postcard, p. 109.

Gate valves

Two new folders have been issued: one on iron body gate valves and one on bronze gate valves. Advantages are listed, and the features are illustrated and described. Specifications, including a trim chart, a working pressure chart, and a test pressure chart are given. *The Ohio Injector Co.*

For free copy circle No. 4 on postcard, p. 109.

FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 109.

Bearings

Concise data sheets on Pollard bearings and flexible roller bearings are available. They include illustrations and specifications, bearing reference number, shaft diameter, bearing length, rollers and outside diameter of bearing. *Pollard Bearings Ltd.*

For free copy circle No. 5 on postcard, p. 109.

Drilling machines

A 24-page manual has been prepared for use with the 16 in. Royal drilling machines. It includes general specifications, dimentional drawings, installation, operation, lubrication, maintenance and parts lists. *Cincinnati Lathe & Tool Co.*

For free copy circle No. 6 on postcard, p. 109.

Gas welding torches

Complete data and specifications about Marquette's five entirely new oxy-acetylene torch sets are given in separate colorful brochures. The brochures tell about the heavy duty Super-Jet, the medium duty Star-Jet, the light duty Aero-Jet and the Jet-O-Matic (an automatic version of the aircraft torch) and the Master cutting equipment. The advantages of aluminum handle construction are described as well as the radically new design which makes these torches stronger, lighter and cooler operating. *Marquette Manufacturing Co.*

For free copy circle No. 7 on postcard, p. 109.

FREE TECHNICAL LITERATURE

X-ray analysis

"Twenty Questions and Answers on X-ray Analysis" is the title of a new piece of literature. This 8-page booklet clearly explains the difference in X-ray powder camera, diffractometer and spectrograph equipment and techniques, specimen preparation, application fields, calibration and selection of analyzing crystals for spectrograph work. *Research and Control Instruments Div., North American Philips Co., Inc.*

For free copy circle No. 8 on postcard, p. 109.

Expanded aluminum

Standard and flattened expanded aluminum is illustrated and described in a 4-page folder. Penmetal expanded aluminum is aluminum sheet which has been slit and expanded to as much as ten times its original width. As expanded metal it loses none of the original qualities of the aluminum sheet. The open area permits free passage of light and air. *Penn Metal Co., Inc.*

For free copy circle No. 9 on postcard, p. 109.

Magnet wire

The newly revised magnet wire catalog includes all current magnet wire applications manufactured by the company; tables on diameters, tolerances, and physical and electrical properties of the various wires; inspection and testing facilities; and a new section covering thermal classifications of available insulations. *The Electric Auto-Lite Co., Wire and Cable Div.*

For free copy circle No. 10 on postcard, p. 109.

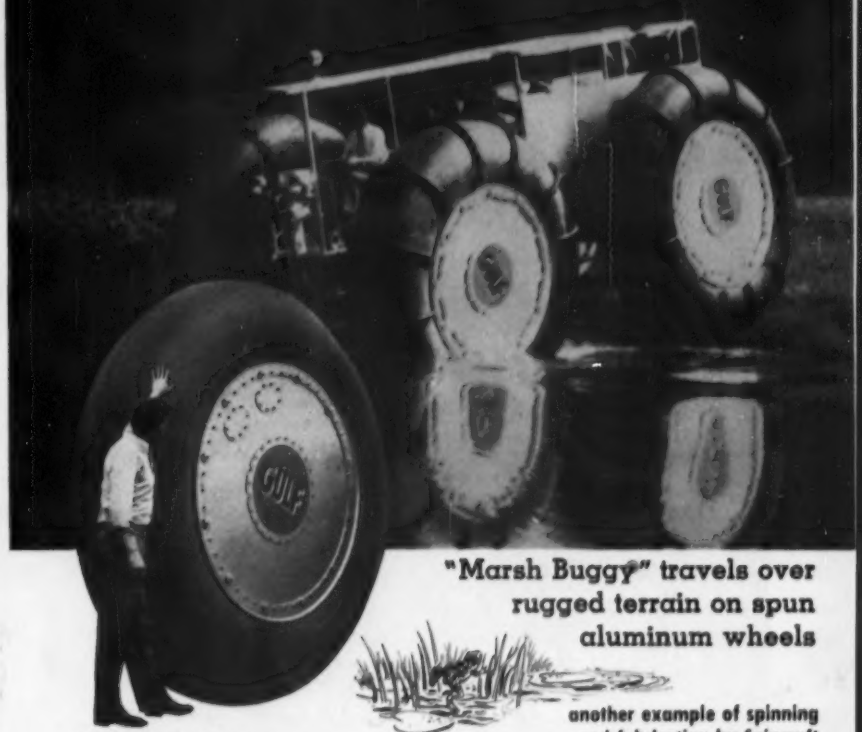
Portable compressor

"On the spot . . . air power package" is the title of a new 8-page flier recently released. This flier describes the 3R-36 cfm self-contained Spot-Air portable compressor. It also deals with the many tools it will operate. Actual on-the-job illustrations clearly point out the added advantages of this light-weight compressor on jobs where bigger compressors are not needed. *Ingersoll-Rand Co.*

For free copy circle No. 11 on postcard, p. 109.

Spincraft did it for Gulf Oil...

Spincraft can do it for you!



"Marsh Buggy" travels over rugged terrain on spun aluminum wheels

another example of spinning and fabrication by Spincraft

13 DIFFERENT OPERATIONS

The "Marsh Buggy" rolls on sturdy, lightweight aluminum wheels — spun and fabricated by Spincraft. Even if all four balloon tires fail, the spun aluminum air-tight wheel drums will keep the vehicle afloat. Wheel flange segments, extensions, .118" thick 5280 aluminum stiffener ribs, No. 11 U. S. gauge (.125" thick) stainless steel front hub cones were machined and assembled to complete the wheels. In addition to spinning, Spincraft performed the following operations: welding, grinding, polishing, machining, punching, braking, drilling, tapping, sawing, riveting, assembly and testing.

Write for Spincraft data book. If you have a specific problem, tell us about it — no obligation.

WHEN Gulf Research & Development Co., a division of Gulf Oil Corp., contracted to build their world-famous "Marsh Buggy" for the U. S. Army, Gulf called on Spincraft to fabricate all four wheel assemblies.

These huge wheels are designed to bear loads of 1,500 to 4,000 lbs. Combining strength with lightweight, these tough aluminum alloy wheels can take grueling cross-country punishment. The 10-ft. dia. tires easily negotiate swamp, water, sand, deep mire and other difficult terrain, at speeds from ¼ to 40 miles per hour.

This is another example of Spincraft's versatility and manufacturing skill. Complete facilities are available for all types of contract manufacture — finished parts, assemblies and complete products. Take advantage of our modern tools for spinning and fabricating. They can pay off in savings for you, too.

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your order for alloy steel bars, billets and forgings, in whatever size, shape and treatment you need, is well on its way to being filled.

All seven of our modern warehouses are located in principal industrial areas . . . near you. Each one is well-stocked: equipped to fill your alloy steel requirements promptly, whether you need standard AISI, SAE or our own special HY-TEN steels—"the standard steels of tomorrow". Every warehouse, too, is staffed with experts in metallurgy who are ready to serve you.

Write today for your FREE copies of Wheelock, Lovejoy Data Sheets. They contain complete technical information on grades, applications, physical properties, tests, heat treating, etc.

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FREE TECHNICAL LITERATURE

Diamond-coated tools

Diamond-coated steel tools especially designed and manufactured for production operations on hard, tough plastics such as: epon, melamines, silicones, hard polyesters, micas, glassite, fiberglass phenolics, etc., are described in a folder. It includes a price list for standard tools. *Dia-Chrome Co.*

For free copy circle No. 12 on postcard, p. 109.

Radiant heaters

A bulletin describes radiant heaters encased in fused quartz shells which are corrosion resistant as well as immune to short circuits and thermal shock. The bulletin includes specifications and list prices. *Pyrosil, Inc.*

For free copy circle No. 13 on postcard, p. 109.

Aluminum goods

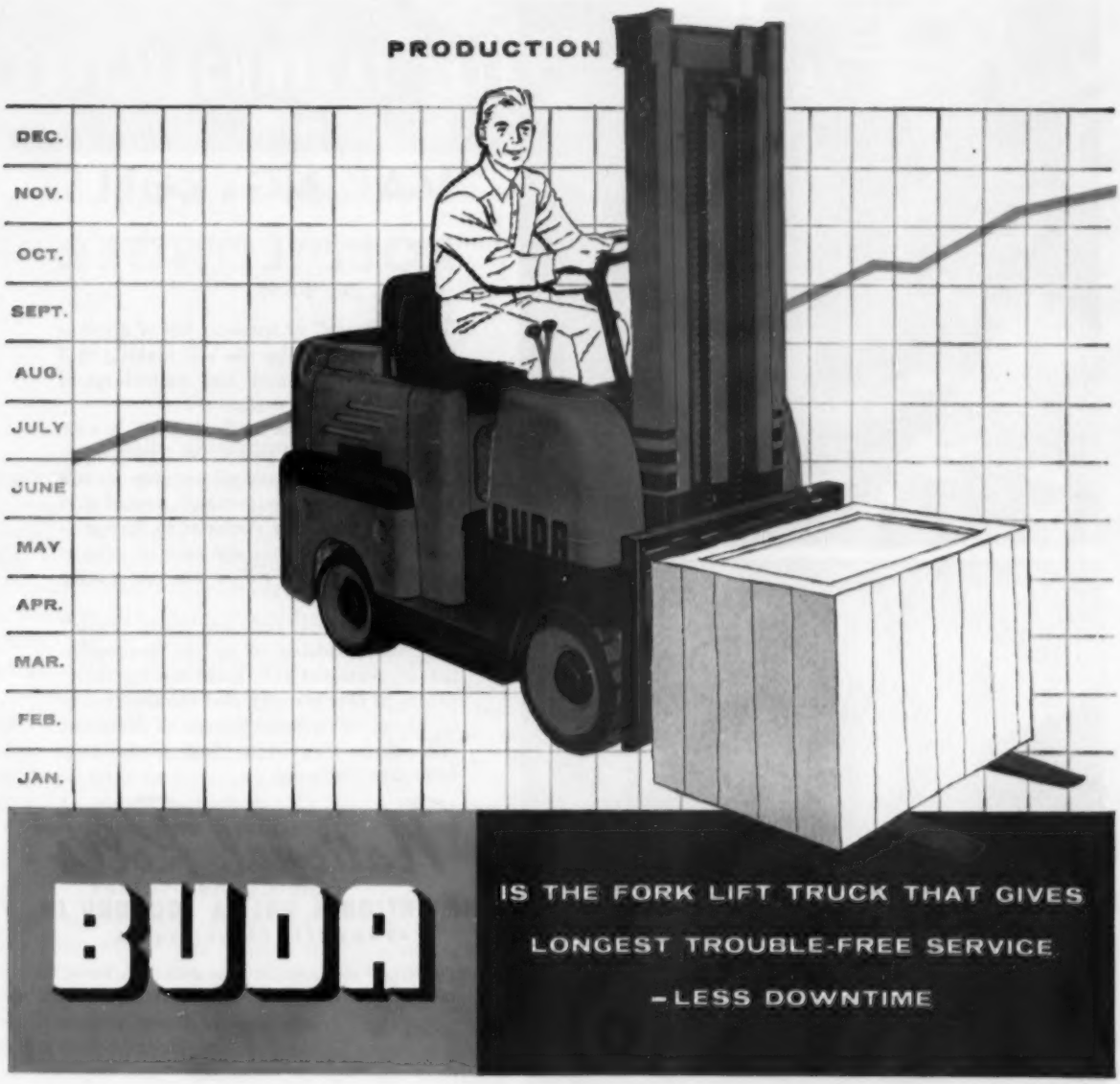
"Service To Industry," a comprehensive summary of facilities and services offered by the company's Contract Division, has been published. The 24-page pamphlet shows company facilities in five large factories and rolling mill with a total area of over 1,600,000 sq ft. The company manufactures parts for major appliances, housewares, aircraft, automobiles and outboard motors in addition to its regular lines of Mirro and Mirromatic utensils. *Aluminum Goods Manufacturing Co.*

For free copy circle No. 14 on postcard, p. 109.

Crystalite refractories

Bulletin CR11 covers a new line of high-temperature Crystalite refractories that permit improvements in operating life as high as 250 per cent in comparison with competing brands of mullite. This 12-page bulletin describes how improved processing techniques give the new refractory the following advantages: superior refractory qualities up to and including 3326 F (1830 C), very high resistance to thermal spalling, highest resistance to structural spalling, and highest resistance to deformation at high temperatures. *Richard C. Remmey Son Co.*

For free copy circle No. 15 on postcard, p. 109.



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IS THE FORK LIFT TRUCK THAT GIVES LONGEST TROUBLE-FREE SERVICE – LESS DOWNTIME

PUT YOURSELF IN THE DRIVER'S SEAT
with this Free facts book. 36 pages, illustrated in color, packed with lift truck information. Write today for your copy.

BUDA Lift Truck—toughest in the field! Buda will give you more trouble-free service than any other lift truck made. Buda Lift Trucks are still carrying more than their share of the production load long after others have been "traded in". And, you don't waste money on downtime with Buda. When something goes wrong with Buda you can count on a 22-second strip for service, a 22-minute strip for overhaul, a 30-minute clutch change. What's more . . . all parts for Buda lift trucks are 85% interchangeable. Now is the time to look into Buda Fork Lift Trucks. When you step into a Buda, you've taken the first step to less downtime, less handling cost and increased production.

THE BUDA DIVISION
Allis-Chalmers Manufacturing Company
Harvey, Illinois

MAKING ROLLS ROLL LONGER

The "mileage" or tonnage life of a roll is governed largely by the roll making skill and experience and the metallurgical knowledge of the maker.

When the roll is made "right," it rolls "right" and gives you extra tonnage life . . . and at National every step in roll making is closely supervised, tested and inspected from raw material to final machining, so that you are sure of always getting top quality rolls when you specify National rolls.

That National rolls are made "right" is further attested to by the impressive list of National roll users among fabricators in this country and abroad; many of whom have been buyers of National rolls since they were first made over forty-five years ago.

National Rolls

THE NATIONAL ROLL & FOUNDRY CO.

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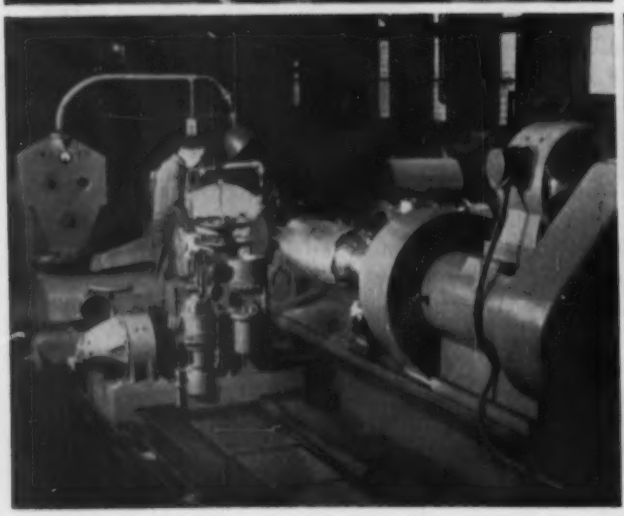

FREE TECHNICAL LITERATURE

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the post card.

This section starts on page 104

Mill attachment

A new bulletin illustrating and describing the new Axelson Type 30 Precision "All-Angle" mill attachment is available. The milling attachment is a quill type having 3½ in. travel and is ideally suited for milling, boring, drilling, reaming and grinding operations. The head is powered by ¾, 1 or 1½ hp motors and has 6 or 12 spindle speeds ranging from 50 to 6400 rpm, depending upon the motor selected. *Axelson Manufacturing Co.*

For free copy circle No. 16 on postcard.

Perforated metals

A new hard-covered catalog contains illustrations and details of the numerous patterns of perforations the company is able to produce, including round, square, diamond square, slots of various types and placings, etc. These perforated metals fulfill any screening, grading, cleaning, sorting and filtering requirement. *G. A. Harvey & Co. Ltd.*

For free copy circle No. 17 on postcard.

Non-ferrous castings

A colorful illustrated bulletin outlines the services, scope of operation, and types of work handled by the company, which specializes in bronze, aluminum and magnesium casting. The firm offers planning advice and engineering design service to aid in economical production of castings. *Springfield Bronze and Aluminum Co.*

For free copy circle No. 18 on postcard.

Metering steam

An application memo has been issued on the use of the Shuntflo Meter in the openhearth process for producing steel. This memo tells how the Shuntflo Meter aids in maintaining the most efficient ratio of steam to fuel oil to the furnace spray burners. It contains short, concise sections on application and descriptions and lists the advantages of using steam-atomized fuel. *Builders - Providence, Inc.*

For free copy circle No. 19 on postcard.

Aluminum sealer

Data sheets describe luster-on aluminum sealer, a new product which produces a chromate film on aluminum that provides excellent corrosion protection and can serve as a paint base. Clear to yellow-brown colors can be produced by the treatment. The process can be substituted for anodizing where hardness is not the prime factor. *The Chemical Corp.*

For free copy circle No. 20 on postcard.

Arc furnace transformers

A 12-page illustrated brochure on transformers for electric arc furnaces features a comprehensive guide form to assist arc furnace users in preparing specifications for the transformers which will best serve their needs. The guide form lists all the optional features of the transformer which might be required for particular applications. *General Electric Co.*

For free copy circle No. 21 on postcard.

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Hardsurfacing rods

Tungsten carbide hardsurfacing rods for manual acetylene, manual arc, and automatic coil application are listed and described in a brochure. Recommended conditions of application are given. Available sizes are shown. *Coast Metals, Inc.*

For free copy circle No. 22 on postcard.

Conveyor equipment

Catalog 400 covers 4 featured, patented products and custom built conveyor equipment. Included are descriptions and illustrations of: a completely automatic elevator for handling small parts magnetically; a totally enclosed bulk material handling conveyor featuring a 2-directional chain to convey in any direction; custom built conveyor equipment such as bucket elevators, screw conveyors, and vibrators and vibrating conveyors. *Prab Conveyors, Inc.*

For free copy circle No. 23 on postcard.

Mask washing machine

Automatic mask washing machines are described in a brochure which includes illustrations and complete descriptions of operation of these machines. In removing accumulated paint from masks these machines permit a time and labor saving of from 35% to 50% over that required by manual cleaning, soaking and brushing. Costly production delays due to damaging of the fine wire bridging on masks by hand scrubbing are also averted. *Conforming Matrix Corp.*

For free copy circle No. 24 on postcard.

Dismantling and demolition

An illustrated booklet describes the dismantling and demolition of industrial structures and obsolete machinery. It shows the dismantling and demolition of gasholder columns, blast furnaces, bridges, towers, railways, beam engines, etc. *George Cohen, Sons & Co. Ltd.*

For free copy circle No. 25 on postcard.

Fixture suspension

The new Unistrut system of fluorescent fixture suspension is described in a catalog. Descriptive line drawings and actual installation photos demonstrate how this complete system requires fewer hanger stems and canopies; how it overcomes ceiling irregularities; how it provides perfect, permanent installation for spaced and continuous-run fixtures; and how it has cut costs in both individual and commercial applications. *Unistrut Products Co.*

For free copy circle No. 26 on postcard.

Automatic weldment cleaning

A new bulletin on the subject of automatic cleaning of rust, flux, and spatter from welded pieces by abrasive blast cleaning has just been published. It has illustrations of the equipment and typical parts that are cleaned. A case history shows that automatic blast cleaning in a Wheelabrator machine reduced weldment grinding time at least 75%. *American Wheelabrator.*

For free copy circle No. 27 on postcard.

Crane hook

A bulletin on Walpole's positive-lock safety hook is available. This crane hook is drop-forged of high strength chrome nickel steel, and its positive closing action prevents its opening when in use, even under swinging. *The Walpole Co., Inc.*

For free copy circle No. 28 on postcard.

Hydraulic test equipment

A 4-page folder covers the company's line of hydraulic test equipment. For the first time there is available a complete facility in one unit for testing hydraulic pressure and flow under controlled temperatures. Illustrations include: controlled temperature hydraulic test stand, basic hydraulic test stand, and high pressure pump test stand. *American Research Corp.*

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New York, N. Y.

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Circle numbers for Free Technical Literature or information on New Equipment:

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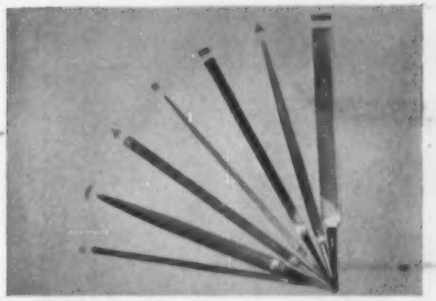
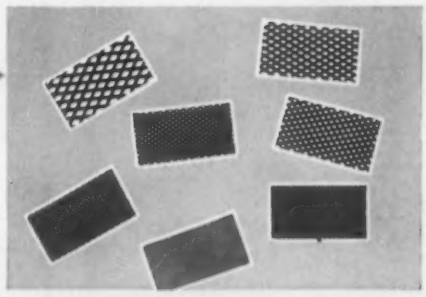
Every practical shape and size

...plus every practical degree of fineness (00 to 6)

...plus the craftsmanship of specialists in

Swiss Pattern file cutting exclusively..





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Toward achieving accuracy in precision work, the first rule of the tool, die, model and fine-instrument crafts is to use files which in themselves are precisely made, carefully hardened, uniformly correct and efficient.

Individual types include: Knife, Round Straight, Half Round, Metal Saw, Square, Pillar Narrow, Three Square, Equaling, Round Tapered, Hand, Warding, Crochet, Barrette, Slitting, Crossing, Joint, Pippin, Testing.

Group assortments: Die Sinkers, Die Sinkers Rifflers, Bench Filing Machine, Broach; Round and Square Handle Needle (by the dozen in plastic cases if desired).

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Allenpoint
Set Screws
WITH
SCIENTIFICALLY-DESIGNED
SMALLER CUP POINTS

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MANUFACTURING COMPANY
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POWER: Boiler Water Treated

Objective to use water with zero hardness, low alkalinity, and zero oxygen . . . Hot-process, hot-zeolite system proves successful . . . Design capacity rated at 400,000 lb per hour.

When new high pressure boilers were installed at the Ohio Steel Works powerhouse two years ago, engineers specified a hot - process, hot - zeolite water treatment system. Objective was a water with zero hardness, low alkalinity, and zero oxygen.

In the Youngstown district of the United States Steel Corp., consisting of the Ohio Steel Works and the McDonald Mills, almost all power is generated at 25 cycles in the Ohio Steel Works powerhouse.

Late in 1953 a new, 15,000 kw topping turbo-generator was added to the two 15,000 kw condensing turbo-generators already in operation. In July and August two new identical 950 psi-900°F blast furnace gas-fired boilers with a nominal capacity of 250,000 lb per hour each were put into operation to supply steam at 900 psi-900°F to the throttle of the new topping turbo-generator.

Power Needs Grow

The new boiler house, in combination with the new topping turbo-generator, made it possible to meet growing electric and steam loads while utilizing the maximum amount of blast furnace gas available.

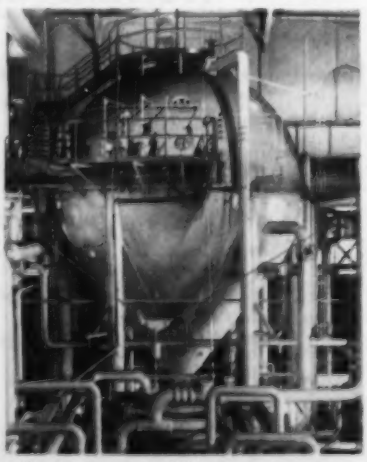
Three water supplies existed as possible sources of use for the new boilers: Youngstown City Water, Ohio Water Service Co. water, and Mahoning River water. Higher treatment requirements disqualified use of the river water and examination of the City water system indicated a potential shortage of supply so it was decided to use Ohio Water Service Co. water for normal use.

Design capacity of the plant is 400,000 lb per hour. The water treatment plant was supplied by Graver Water Conditioning Co., New York.

Sprayed Through Steam Zone

Raw water is pumped to the Graver Sphericone hot-process softener and is sprayed down through a steam zone in the top where it is heated to within a degree of steam temperature reducing the oxygen to a very low value. Thorough mixing of chemicals is provided by adding lime slurry in proportion to the water flow at the point where the spray strikes the water.

The water then passes down the downcomer and out the lower



Water conditioner . . .

WANT MORE DATA?

You may secure additional information on any item briefed in this section by using the reply card on page 109. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

opening near the apex of the cone at sufficient velocity to suspend the precipitates and form a dense, active sludge zone which promotes growth of larger, denser precipitate particles and completes the reactions.

The Sphericone unit also contains two 12,000 gal compartments, one which stores clear filter effluent water for backwashing, and the other which stores dirty back wash water returned from the filters and zeolite.

Stable Sludge Blanket

The low rise rate plus the favorable hydraulic conditions for sludge separation provided by constantly decreasing velocity in the lower part of the Graver Sphericone tank results in a very stable sludge blanket and the production of exceptionally clear effluent water.

When the clear water separates from the suspended precipitates in the lower portion of the unit and rises to the effluent collector, it flows by gravity through four 9 ft x 4 ft straight height pressure filters arranged in parallel. The filters are provided with 36 in. deep beds of graded anthracite filter media and serve to remove the small amount of suspended matter remaining.

Water Vigorously Scrubbed

A booster pump then pumps the water through three 8 ft diameter x 6 ft straight height hot-zeolite softeners arranged in parallel, to a de-aerating heater. Each one of these softeners contains 125 cu ft of sulphonated styrene exchanger with a rated capacity of 2500 kg.

The de-aerator is the two-stage spray type where the water is first sprayed into an atmosphere of steam and then is vigorously scrubbed by fresh steam in the second stage.

Two simplex, single-acting, horizontal type pumps were installed to pump a solution of sodium sulphite into the feedwater at the feed pump suction. The sodium sulphite reacts with the last traces of oxygen present forming sodium sulphate.

There's *this* about "Fischer Turned" BRASS AND ALUMINUM NUTS

CLASS 2 PRECISION THREADS

COUNTERSUNK BOTH SIDES

TAPPED THROUGH & SQUARE WITH FACE

BURRLESS

CLEANED AND DEGREASED

PROMPT DELIVERY

All nuts are not the same. Fischer brass and aluminum nuts, for example, are *precision turned*... making possible new economies in assembly operations.

You pay no premium for this extra quality... Fischer *turned* nuts cost no more than those produced by other, less accurate methods.

A complete range of standard types and sizes is stocked at the factory... "specials" are produced quickly and inexpensively.

C-271-PS

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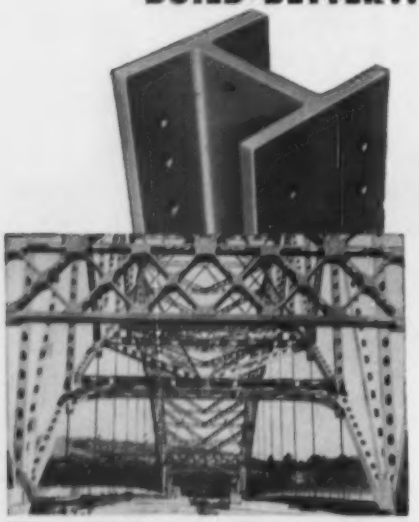
SPEED DELIVERY...
REDUCE COSTS...
BUILD BETTER...



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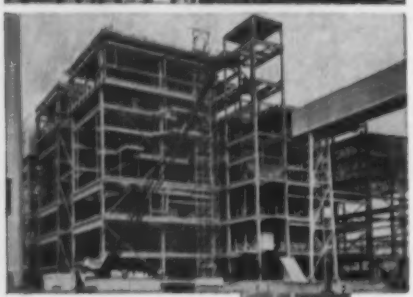
Fabricated Structural Steel

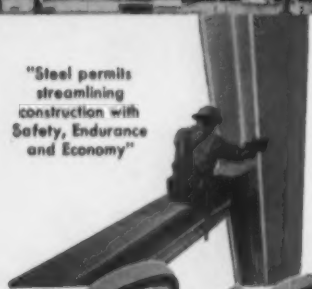
by

FORT PITT BRIDGE



When you want strength, endurance, versatility, economy and speed in *your* construction, specify and use Structural Steel fabricated by Fort Pitt Bridge—specialists in the engineering, fabrication and erection of all types of steel construction since 1896.

"Steel permits streamlining construction with Safety, Endurance and Economy"



"There is no substitute for structural steel"

AISC

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Sludge Easily Removed

Three single - acting duplex pumps are used to pump a solution of phosphate into the steam drum of both boilers. The phosphate precipitates any residual hardness as a phosphate sludge which is easily removed through the boiler blowdown system.

The major instruments of the plant are all flush mounted on a single, compact, illuminated panel located at the end of the zeolite battery away from the hot process softener.

The old treatment facilities were also modernized as much as possible to attain a better treated water, and booster pumps were added to the plant purchased water system to prevent dangerous drops in supply pressure.

The equipment has been in operation for some time now with most satisfactory results.

Condensed from a paper originally presented at the Fifteenth Annual Conference of the Engineers Society of Western Pennsylvania, Pittsburgh. Authors: J. P. Katzenmeyer, Project Engineer, U. S. Steel; M. Lane, Technical Manager, Graver Water Conditioning Co.

Testing:

Tear test checks titanium sheet quality

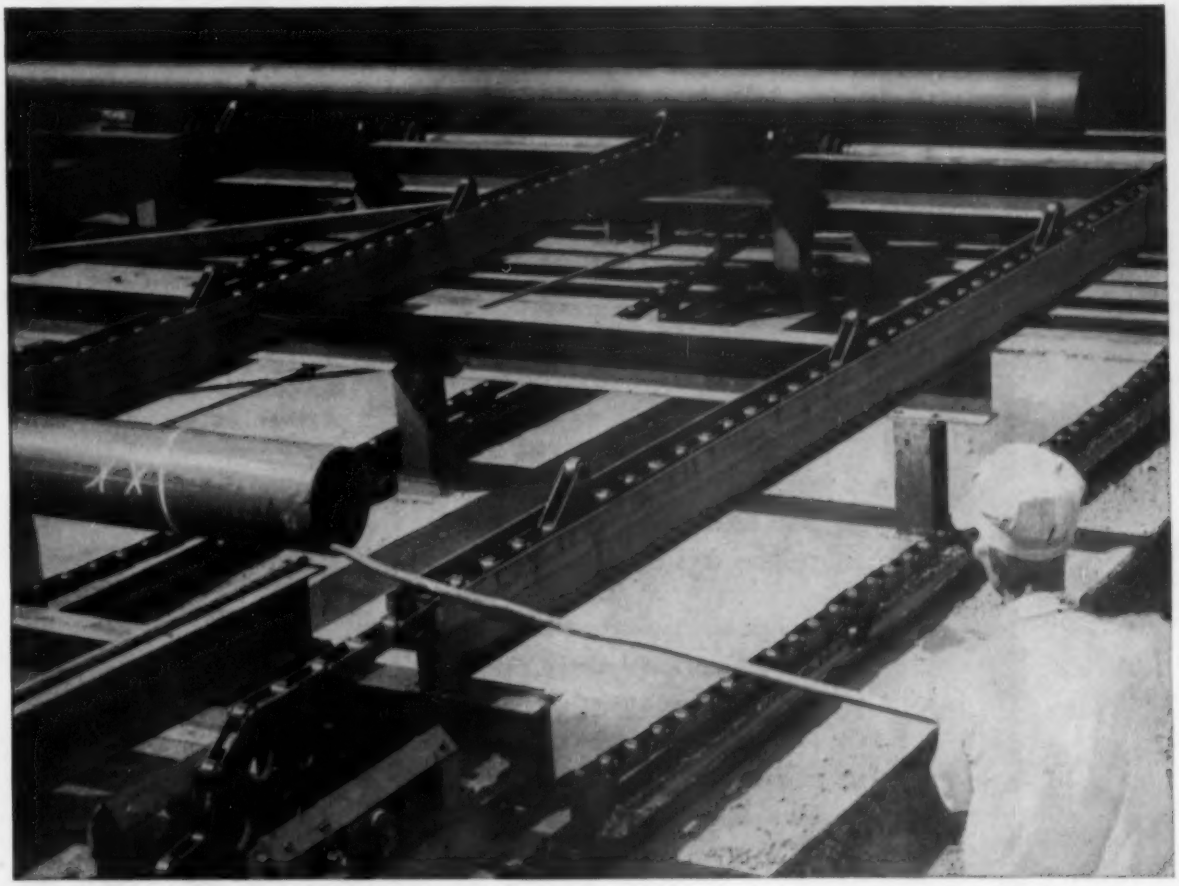
A new tear test for titanium sheet is used at Douglas Aircraft Co. to separate usable quality sheet from reject grade material. The test is said to measure not just the tearing quality of the material, but rather "a quality represented by several factors including brittleness, formability and strength."

Specimen is Notched

Testing is done by pulling the ears of a specially-prepared specimen in a Baldwin-Lima-Hamilton 5000-lb capacity universal testing machine. The tear originates at a pre-set point produced by a notch with a semicircular bottom. The test is performed by applying an increasing load which is autographically recorded along with the strain.

The load increases until a maximum value starts the tear from

LXS is the chain for this job



Transfer conveyor from inspection to cut-off at steel pipe mill uses Link-Belt LXS chain with attachments to move the heavy pipe smoothly.

Heavy loads, impact, exposure— so LINK-BELT LXS is a natural choice at steel pipe mill

Handling 40-foot lengths of pipe that weigh around 1000 pounds each is a job that demands real stamina in chain. That's why the designers of this pipe mill specified Link-Belt LXS.

Use of selected steels plus accurate sizing and close fit of mating parts gives this chain ruggedness and accuracy. *It's the long-life answer for severe conveyor and drive service.*

And the story's the same for every drive and conveyor requirement—you'll find the chain that's *best* for the job in the complete Link-Belt line. No other single source can equal Link-Belt's broad range of roller and silent chain . . . of cast, combination, forged and fabricated types.

Your nearby Link-Belt office or authorized stock-carrying distributor can give you all the facts. Call today.

No ONE chain serves every purpose — get the RIGHT one from Link-Belt's *complete* line

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LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 18.702

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buy ... when it costs less to have Plume & Atwood do the stamping, forming or drawing of non-ferrous metals than you would have to pay to duplicate our equipment and know-how.

buy ... when you need the exactness and attention required of quality polishing, plating, buffing, lacquering and intricate assembling that would put your production costs and schedules out of line. Plume & Atwood has the most modern equipment and perfected methods in the field.

make ... your own stamped or formed products better than ever by using P&A's finest brass, phosphor bronze or nickel silver. Because we cast and roll sheet and coil for our own use, we know your fabricating problems and requirements — the metal is tailor-made for your specific needs.

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THE PLUME & ATWOOD MANUFACTURING COMPANY

THOMASTON, CONN.

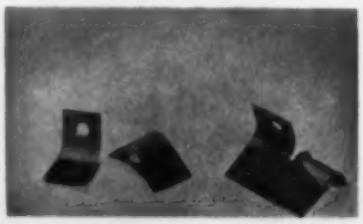
N. Y. Office: 220 Broadway

the preset notch. Then the load drops off rapidly or slowly in relation to the ductility or brittleness of the material.

Slow Tear is Good

A brittle material drops its load suddenly and at the same time the crack progresses rapidly in a snapping action. A good or ductile material will drop its load much more slowly and tear in a slow, progressive manner.

The test, including the shape of the specimen and the special hooks for gripping test pieces, was designed by Douglas personnel. The steel hooks are strong enough to carry the maximum load sustained in testing the heaviest gage titanium sheet used at Douglas.



Tear tells story . . .

Brazing:

Flux often a good indicator of surface cleanliness.

Given a well-cleaned, fluxed surface to work on, silver brazing alloys will wet easily to produce strong, leak-tight joints. Flux helps the molten alloy wet metals by reducing surface tension and by removing and inhibiting oxidation. But unless the flux itself wets the metal initially, there is little chance that the brazing alloy can do so.

Flux Acts As Indicator

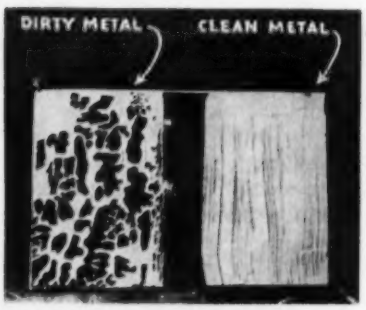
Flux is compounded to remove a certain amount of metal oxides, and contains a wetting agent to help break up thin films of oil such as are commonly encountered on mill supplied materials. However, when the accumulations of dirt, grease, oil and oxides become excessive, they can retard wetting by both the flux and alloy.

It is often possible to predict whether the brazing alloy is likely

to wet by examining the way the flux adheres to a surface. To illustrate this point, technicians at Handy & Harman took a thoroughly oily steel plate which has been lying around the shop. They cleaned and degreased one half of the plate; the other half they left intact. They then applied standard Handy flux to each half.

The cleaned half left an even coating of flux. The oily half contained fluxless islands. If brazing were attempted on a piece in the latter condition, the alloy would wet so sparsely that a mechanically weak and probably leaky joint could be expected. If the flux wets poorly, it is best to clean and degrease the pieces before attempting to braze them.

The usual cleaning procedure is: Degrease in a vapor degreaser or suitable solvent. Then remove any oxide by pickling or by touching the piece to an abrasive belt or wheel. When handling cleaned parts, do not touch the joint faces; a greasy finger print is as much of an offender as a patch of oil or oxide.



Cleaning comparison . . .

Slitting:

Silicon steel easily cut to narrow widths.

The problem of "make or buy" slitting has been solved by one transformer manufacturer who decided to "make"—and in so doing, slashed his slitting costs 60 pct. Because the narrow strip widths required are unavailable from mills, Instruments & Accessories Co., East Islip, N. Y., formerly bought outside slitting service.

You can get the steel* you need from Levinson's large stocks

. . . when you need it!

Right now Levinson has under cover in stock the largest and most complete selection of the various sizes of steel beams, channels, angles, plates, sheets, and bars in its 52-year history.

If you need any of the above items, pick up your phone and call Pittsburgh, Pennsylvania, Hubbard 1-3200 and tell us what you want and ask for a quotation. You'll find Levinson, as it has in the past, never takes advantage of steel shortages to hike prices. Try Levinson and see—and if you need your steel fabricated, Levinson can do that too. Send your specifications.

**plain or fabricated*

Warehousers, fabricators, designers of steel for over half a century

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Engineer Wallace Feemster and Press Foreman Sherwood Henderson watch as 600-ton Warco Eccentric Gear Press performs five stamping and drawing operations in manufacture of refrigerator motor housing.

"Presses That Stand Up Plus A Desire to Serve After Sale Is Why I Choose WARCO . . ."

Says Chief Engineer of One of America's Foremost Stamping Firms

"When it comes to quality, the Warco Press is one of the finest, and we like the way Warco engineers stay with the sale until everything is satisfactory," say engineers of the Bingham-Herebrand Corporation, Toledo, O.

"If for any reason our Warco equipment requires factory service, a phone call brings them on the run," they continue, "and it's this kind of service that must be considered when buying equipment today."

Bingham-Herebrand is one of the nation's leading custom stamping, forging, and fabricating firms and through the years has used equipment of many makes and is well qualified to make machine comparisons.

If you want quality press equipment backed up by excellent service, add the name Warco to your press supplier list. Representatives in principal cities.

Federal WELDERS
Warco PRESSES

The Federal Machine and Welder Company
Warren, Ohio

"Slitter cuts costs and reduces inventory . . ."

Now, using a standard production model rotary gang slitter manufactured by the Stanat Mfg. Co., Long Island City, N. Y., the transformer producer cut costs, improved product quality, reduced inventory requirements, and speeded production. It will pay for itself within 2 years.

Specialist In Field

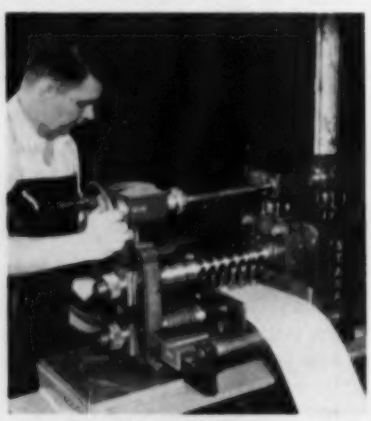
Instruments & Accessories is a specialist in the field of manufacturing instrument transformers which are used in conjunction with ammeters, watt-hour meters, and protective relays for the measurement and control of electric power.

These transformers are constructed in capacities ranging from 100 to 6000 amp primary currents. The heart of each transformer is its wound, grain-oriented silicon steel strip core, selected because of the material's high permeability and low loss factor.

Narrow Widths Required

Generally, steel mills do not supply silicon strips in the very narrow width required for most I & A production. Early in 1954, Instruments & Accessories purchased a Stanat S-180 12 in. wide rotary gang slitter to slit its own silicon steel strip.

Incoming material—coils weighing up to 1200 lb in varying gages—is mounted on a pay-off, fed



Precise slitting . . .

through the slitter, and rewound on an automatic recoiler.

The slit strip then goes to a core winding machine where a predetermined length is wound to build up the core with a controlled inside and outside diameter.

Core Annealed

Spot welding secures the core, which is then annealed in a bell type 100 kw electric controlled atmosphere furnace of 5000 lb capacity. This furnace uses Leeds & Northrop automatic program temperature control equipment to insure the maximum quality in the finished product.

In addition to faster service possible, the slitter, virtually eliminates burrs, improves the stacking factor and permits the steel to wrap closer together.

Contamination of the strip from lubricants is also eliminated because no lubricant is required with the slitter. Accuracy of the slitter, makes it possible to regularly produce 5/8 in. width strip with a tolerance not exceeding plus or minus 0.001 in.

Handling:

System insures uniform charging in foundry.

An ingenious and highly mechanized charging system insures uniform charging throughout 16 hours of pouring at the Cleveland Works of National Malleable and Steel Castings Co.

Heart of the charging system for each battery of two cupolas is a "merry-go-round" located about 50 ft in back of the cupolas. This is a continuous, circular conveyor system installed in a pit.

One, One and Two

Nine cone-bottom Whiting charging buckets travel on this conveyor and pass under the hoppers containing coke, limestone and metal. One bucket of coke and limestone and two buckets of metal are used for each 4-ton charge.

One operator controls all of the loading from his station in the center of the pit. The scales under the

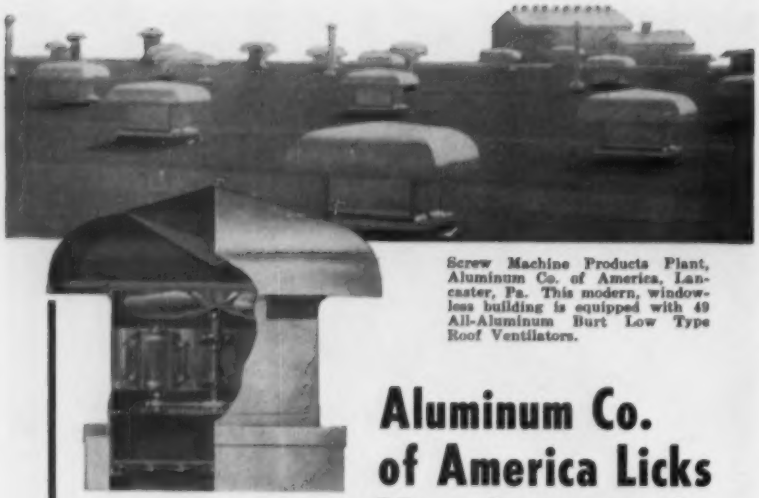
HOW RUGGED IS YOUR ABRASIVE?

Is it rugged enough to prove itself in performance? You can't judge an abrasive by looks, claims or promises. The only test of any abrasive is its *cost per ton of castings cleaned.* Because of exclusive metallurgical characteristics, Malleabrasive gives you the lowest cost per ton cleaned of any premium abrasive on the market! This has been proved in hundreds of production tests by users throughout the country. Prove it in your own production test. *We GUARANTEE that Malleabrasive will give you lowest cost per ton of castings cleaned.*

To order Malleabrasive, or for additional information on running a test, contact Globe Steel Abrasive Co., Mansfield, Ohio.

U. S. Patent #2184926 (Other patents pending)

MALLEABRASIVE®



Screw Machine Products Plant, Aluminum Co. of America, Lancaster, Pa. This modern, windowless building is equipped with 49 All-Aluminum Burt Low Type Roof Ventilators.

Aluminum Co. of America Licks Ventilation and Oil Mist Problem

With Burt Low Type Ventilators

THE PROBLEM — The modern building design selected for Alcoa's new Screw Machine Products Plant is practically free of wall openings. Its 200,000 square feet of floor space has no cross circulation or natural ventilation. Production operations create considerable heat and oil mist.

THE SOLUTION — Forty-nine 48" all-aluminum Burt Low Type Roof Ventilators are used to maintain a pleasant working atmosphere the year around. Oil mist is scarcely discernible. Twenty-five of the Burt ventilators supply air. The remaining twenty-four function as exhaust ventilators.

COMPARATIVE COST — The high volume of air supply utilized here is relatively inexpensive. According to the Alcoa Staff Engineer for Air Conditioning, the initial cost of air supplied by the Burt Low Type Roof Ventilators is less than one-fourth that of a centralized duct system.

SUGGESTION — If you are looking for fresh air at low cost, investigate Burt's complete line of modern, efficient roof ventilators.

Send for **FREE** *Data Book!*

Write for Burt Data Book SPV-101-E. It supplies quick data on Burt's complete line of modern Roof Ventilators.

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Mechanized foundry . . .

hoppers are placed so that the operator and craneman can read them from their control stations.

Two Batteries of Cupolas

When a loaded bucket reaches one of the pick-up points, the same operator controls the Whiting horseshoe charger that hoists the bucket, carries it into the wishbone support in the cupola, discharges the load, and returns the bucket to its position on the conveyor. Each of the cupolas is served by a 7½-ton capacity Whiting horseshoe charger.

The melting department of this foundry consists of two such batteries of cupolas. One, installed in 1930, has two 120 in. Whiting cupolas. The other, installed in 1953, has two 108 in. Whiting cupolas. Only one cupola of each size is used each day, and 55 to 65 tons of malleable automotive castings are poured per hour.

Brushing:

Methods speed deburring operations.

Brushes, like grinding wheels, work efficiently on the centerless principle. A "centerless brushing" machine at one company thoroughly cleans and uniformly finishes 20,000 small cylindrical parts a day. Formerly, with hand wiping and polishing, production was slower and results were not uniform.

The brush used, made by Osborn Mfg. Co. of Cleveland, is inter-

"The brush is a combination of wire and horsehair . . ."

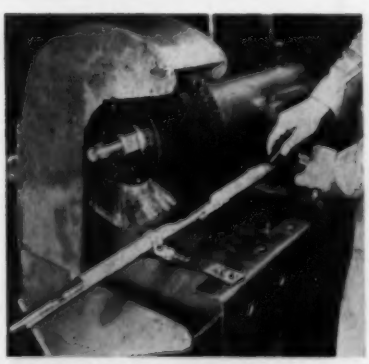
changeable with grinding wheels so that conversion to centerless brushing requires only a change of wheel. In most cases, the regulating wheel used is the same as for grinding operations. Parts are rapidly fed into the brush roll which is a combination of wire and horsehair.

From 18 to 2 Seconds

In another case, time to clean the threads of 2½ x ¾-in. set screws was cut from 18 to 2 seconds with a simple but unique brushing method.

The operator feeds the screws into one end of a pipe and a wire filled power brush makes contact with the work at a slot cut in the pipe, spinning and cleaning the threads uniformly. A little stationary wire brush, inserted through the pipe, controls rotation and traverse of the work.

Brushes 20,000 a day . . .



Cleans threads fast . . .

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DPS BARREL FEEDER

A Time-Tested Device for use on parts requiring critical selection.

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AVIBRATORY feeding device to effectively select and feed parts that could not normally withstand tumbling.

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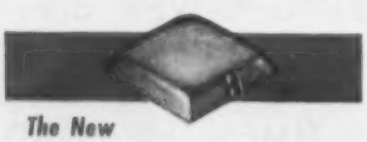
It includes:

The

HANNA 38-POUND PIG

The foundryman's favorite standard pig. Available in all grades, silvery and HannaTite. A good example of the quality that has made Hanna "the best known name in iron."



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EXCLUSIVE HANNATEN INGOT

For 10-lb.-pig users, this new ingot means no free-carbon pockets, finer grain structure, more even melting. Available in all grades, silvery and HannaTite — an extra-close-grain iron.

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TECHNICAL BRIEFS

Metals:

Improve creep life of moly with stable oxides.

Stable oxides of certain metals dispersed in molybdenum produce compositions with greater creep strengths than those of conventional molybdenum alloys, Battelle Institute, Columbus, Ohio, has found. Using powder-metallurgy methods, Battelle metallurgists have created molybdenum oxide compositions with creep lives more than twice as long as those of ordinary molybdenum alloys at temperatures of 1800° to 2000° F.

This improvement in creep strength—or the ability to withstand high stresses at elevated temperatures without deforming—was accomplished without altering room-temperature properties of molybdenum. Most effective strengtheners among the oxides studied were the hard, stable, insoluble oxides of zirconium, titanium, and chromium.

Have Best Creep Lives

Battelle experiments on the conventional alloys of molybdenum, made by powder-metallurgy methods, showed that those made with silicon, chromium, aluminum, and tungsten have the best creep lives at temperatures of 1800° F.

Outstanding among oxide additives were zirconium oxide and titanium oxide, while silicon was the best alloying metal. At 1800° F, some of the oxide additions increased the 100-hour creep rupture strength of molybdenum almost fourfold.

Need Oxidation Protection

Present research at Battelle suggests that further increases in molybdenum creep life may well come from compositions including both metallic and oxide additions.

When molybdenum alloys are exposed to elevated temperatures, they need protection against oxidation. For that reason, the research also included experiments on the effects of cladding materials on creep properties.

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Precision machining is done by skilled craftsmen in our modern machine shop.
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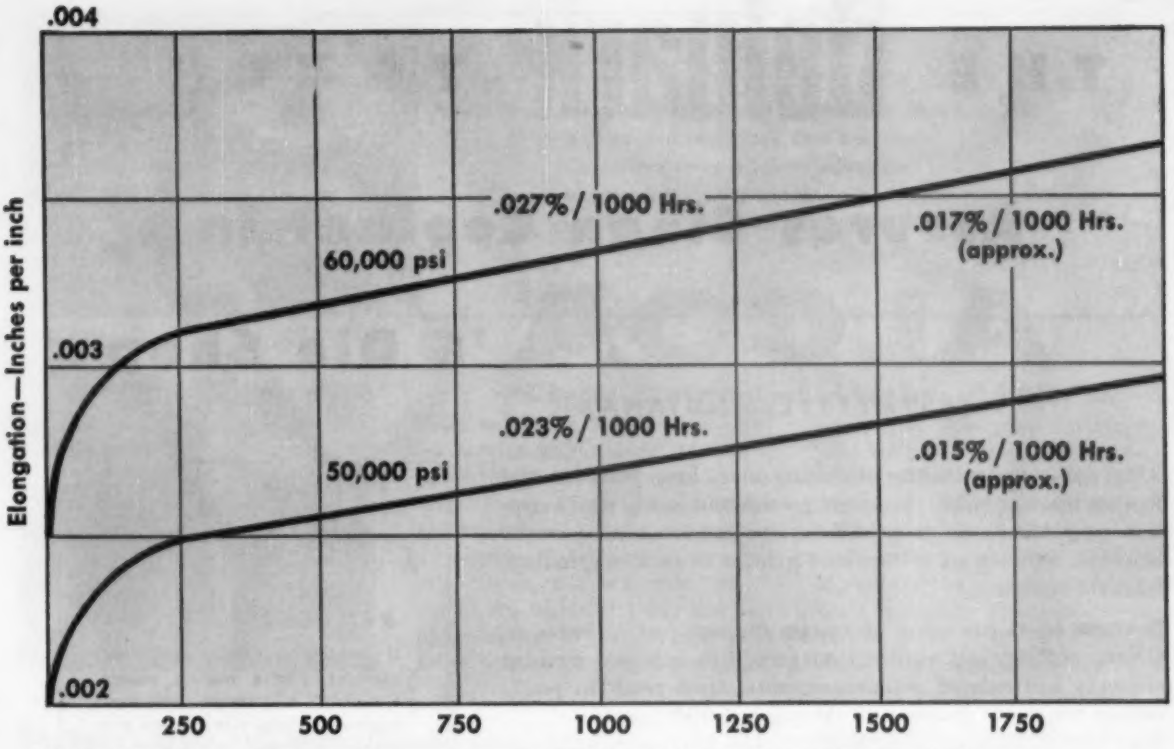

Time-elongation creep curves at 900°F. show high creep resistance of "17-22-A" (S)

How to get high turbine alloy performance with low alloy steel

IF you produce gas turbine parts or other parts that operate at temperatures as high as 1000 degrees F., you may feel you have to use an expensive high alloy steel.

But you can make parts that will do the same job, and save strategic alloys, using "17-22-A" (S) steel made by the Timken Company.

This steel helps you cut costs because it contains only 3% alloy. Yet it gives maximum creep resistance up to 1000 degrees F. The graph above shows it at 900 degrees F.

There are other advantages. "17-22-A" (S) resists heat checking and thermal cracking. It is readily workable up to 2300 degrees F. It's easy to machine and weld. And maximum high temperature properties can be developed by normalizing and tempering, minimizing the possibility of distortion and quench cracking.

For complete information on "17-22-A" (S) steel, and its companion analysis, "17-22-A" (V), recommended for temperatures up to 1100 degrees F., write for Technical Bulletin No. 36A. And for help with your high temperature steel problems, call upon our technical staff. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING

THE Delpark TOUCH

Assures Clean Coolant in

ALCOA 'S Die Shop

(LAFAYETTE, INDIANA)

Alcoa's dies for extruding aluminum must have precision and flawless machine work. To insure precision in facing their extrusion dies, Alcoa's die shop at Lafayette, Indiana, makes use of DELPARK filtration on a Blanchard grinder to remove grindings from the coolant.

DELPARK offers you many advantages through coolant filtration. Greater accuracy and quality, longer tool life, increased machine efficiency and reduced maintenance costs often result in yearly savings which are greater than the original filter cost.
Let a field engineer show you how DELPARK filtration can increase savings for you. *Write today for more information.*

Backed by more than 40 years experience in Industrial Filtration

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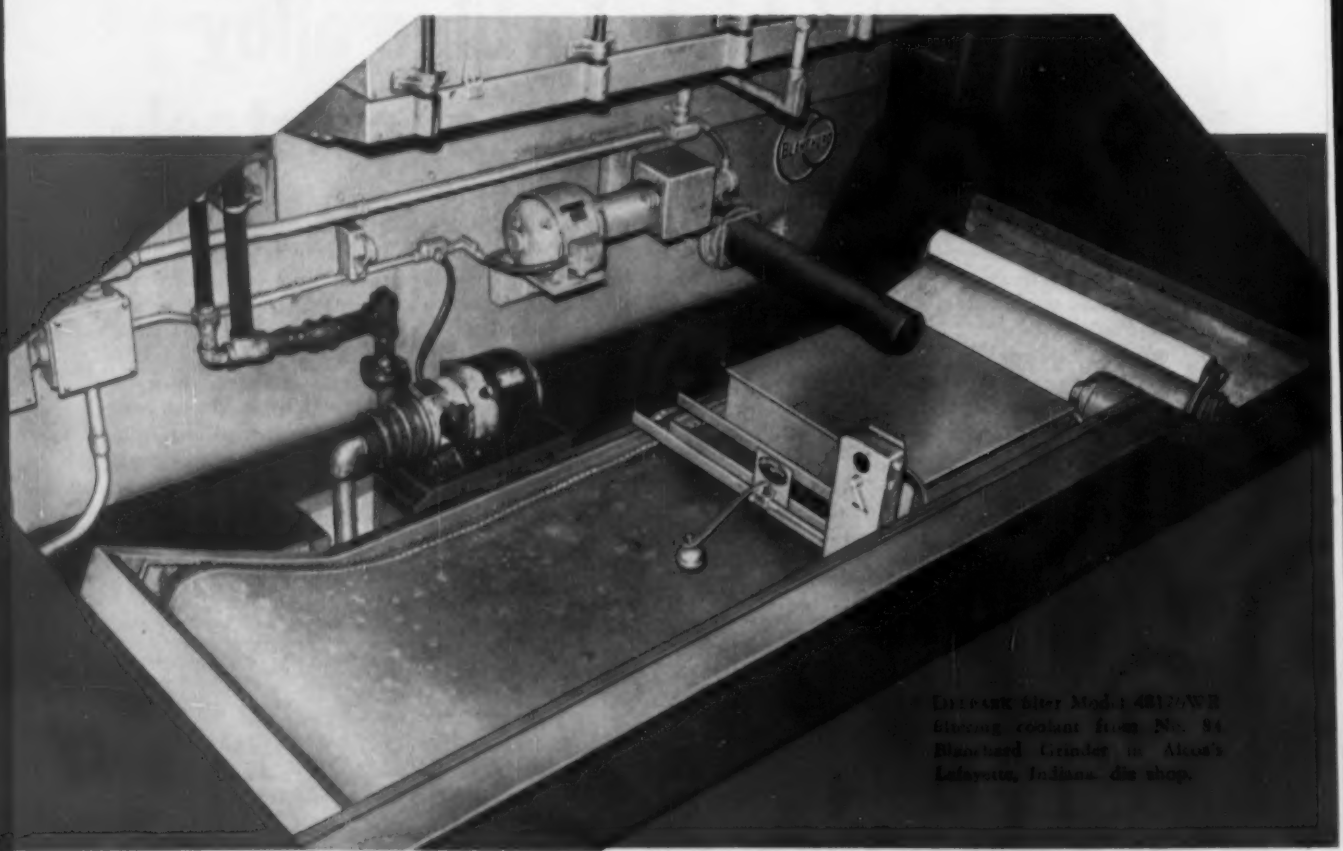
ON REQUEST!

If your grinders are using unfiltered coolant, you're wasting money. DELPARK's bulletin on coolant filtration can help you increase production and machine efficiency.

IT'S FREE . . . *write today for your copy.*



DELPARK filter Model 4812-WB filtering coolant from No. 84 Blanchard Grinder in Alcoa's Lafayette, Indiana, die shop.

INDUSTRIAL FILTRATION COMPANY, 91 INDUSTRIAL AVENUE, LEBANON, INDIANA

NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies . . . for more data use the free postcard on page 109 or 110

Checks 20 dimensions of 13 sizes of stator blades

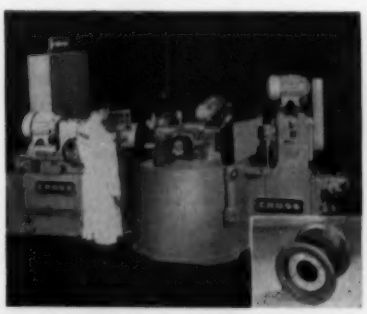
Fully automatic, 4-station, in-process sorting gage, Model 144 B-34, measures 20 dimensions on 13 different sizes of jet engine stator blades, 2 to 6 ft long. Operating at a speed of 0-40 workpieces per min, the gage directs reject parts out of the manufacturing line and allows only good parts to pass on to a conveyor to be carried to further processing. The gage, an integral part of an automatic factory, is conveyor fed and mounted in the continuous line. A walking beam moves work through the gage. All measuring is done with the work at rest and the gaging units in forward position. *Federal Products Corp.*

For more data circle No. 30 on postcard, p. 109.

Shakeout tool saves time cleaning small castings

New shakeout tool that speeds up sand removal from small castings is designed for use in pattern and model shop foundries, brass foundries, and small job lot foundries which do not require use of large shakeout machines. The new tool performs shakeout on a piece part in a matter of seconds. It has an air-operated reciprocating peen mounted to a C-section yoke. The piece part is placed in the yoke, and the tool is set in operation with a hand or foot valve. *Keller Tool Div. of Gardner-Denver.*

For more data circle No. 31 on postcard, p. 109.



Dial type machine for tractor wheels

A new dial type machine has been developed for the drilling, chamfering and tapping of tractor wheels. The machine incorporates a four-station power-operated index table—one for drilling, one for chamfering and one for tapping six holes on two sides of the wheel. Production is 54.5 pieces per hour at 100 pct efficiency. Fluid motor drive is provided for indexing. The automatic unit also has individual lead screw feed for tapping and gravity-operated cam clamping for work-holding fixtures. Regular Cross features include hardened and ground ways, hydraulic feed and rapid traverse and construction to J.I.C. standards. *Cross Co.*

For more data circle No. 32 on postcard, p. 109.

Segmented automation features transfer machine

In the new Snyder segmented automation concept, machining operations are performed by individual machines or segments, each having individual base and slide units, as well as individual control panels. The only connection between the segments is a single transfer bar that moves parts in process from one machine segment to the next. This new concept is being initially applied to a 111-ft long, 75-station, in-line transfer machine for producing cast iron automotive automatic transmission front oil pump bodies at a rate of 144 pieces per hr at 80 pct efficiency. *Snyder Tool & Engineering Co.*

For more data circle No. 33 on postcard, p. 109.

Turn Page

for equal service regardless of size

–call CRUCIBLE

An order for pounds or tons gets you the same "big order" service from Crucible. For no matter what quantity or type of special steel you specify, your order will be filled quickly from local stocks at your nearby Crucible warehouse. Local stocks include tool, stainless, alloy, high speed, almost every type of special purpose steel . . . in practically every size, finish and grade.

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Stocks maintained of
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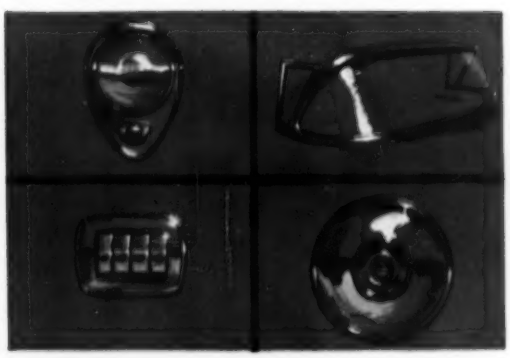

The beautiful bright molding and trim that style your car are made of non-corrosive, easy to clean Stainless Steel. Designers of automobiles and hundreds of other products specify Stainless Steel for its many valuable properties.

For the product you make today and the product you plan for tomorrow specify McLouth high quality sheet and strip Stainless Steel.

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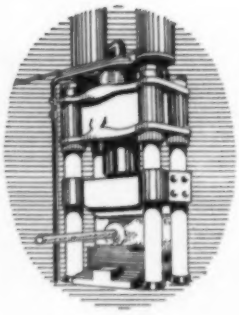
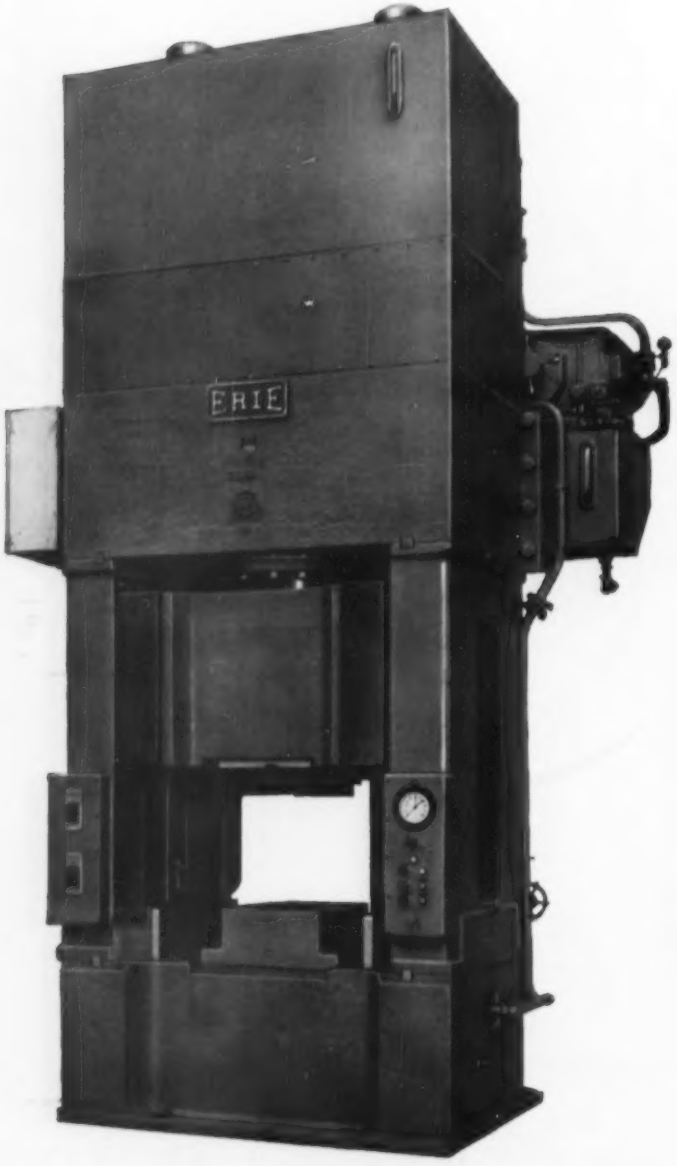
MANUFACTURERS OF STAINLESS AND CARBON STEELS

in the good old days



When press forging was done on steam hydraulic presses, water intensified . . . power strokes were short and slow.

Even then ERIE was the greatest name in forging machinery in both presses and hammers . . .



today

Erie Foundry has just built this extremely fast hydraulic forging press. This 1000-ton semi-automatic machine, used to forge jet engine turbine blades by a special process, completes a *6" stroke cycle in just 4 seconds.*

Its high speed is achieved by using two self-contained pumps. This forging press incorporates speed control with automatic pressure and precision reversal by means of a special compression and decompression feature, designed by Erie hydraulic engineers. Maximum stroke is 28". A long (1 to 1) guide ratio insures accuracy. By combining side housing and strain rod construction, the machine is made rigid and produces perfect forgings.

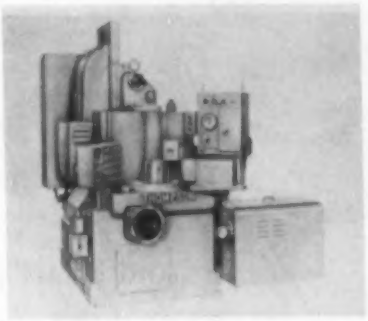
Just one more indication of why Erie Foundry is today the greatest name in forging machinery.

in our 60th year

ERIE

ERIE FOUNDRY CO. ERIE, PA.

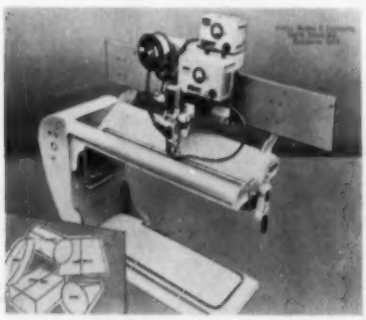
Six-inch twin rotary production surface grinder



Designed to eliminate the downtime of loading and unloading a surface grinder, the new 6-in. twin rotary surface grinder features two work tables with 180° automatic indexing cycle. One of the features is the setting of the cut to contact the workpiece automatically and then feed to size, spark-out and index. The machine is also equipped with automatic gaging so that when the parts are removed from the grinder they are completely inspected for size thickness assuring the accurate production of parts on a high production basis. Equipment comes in 6, 8, 12, 16, 20 and 24 in. table diam. *Thompson Grinder Co.*

For more data circle No. 34 on postcard, p. 109.

Welds with fusion welding automatic processes



Longitudinal welding fixture will weld flat plates, sheets, cones, cylinders, and boxes with any of the fusion welding automatic processes as well as hand welding. Operator's visibility is unlimited. Machine welds 0.005 to 1 in. in thickness. Narrow hold-down fingers pivot and are adjustable in and out. The mechanical action of fingers forces edges of parts together. Toe-touch foot control permits controlling fingers from any operator position. There are up to 6 copper or metal inserts in rotating back-up mandrel-choice of grooves. Model LW Series 1000 fixture is available in lengths from 2 to 12 ft. *Airline Welding & Engineering.*

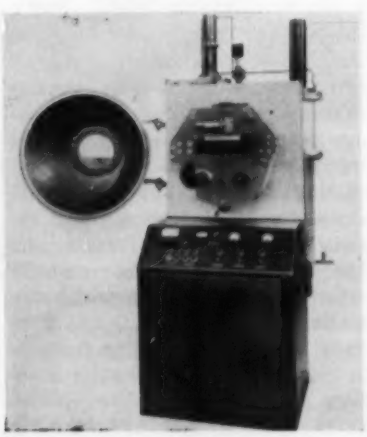
For more data circle No. 35 on postcard, p. 109.

Deep throat press for fast, precision stamping

New 1½-ton 7-in. deep-throat press, built to quality standards, becomes a companion to the Model 1 Standard. It is designed for fast, precision stamping with deep-throat features, giving minimum downtime and long service life, the manufacturer states. A solid one-piece, alloy-steel crankshaft is heat treated and precision ground. Crankshaft is the eccentric style with ¾ in. standard stroke. Flywheel is carried on roller bearings. Driving mechanism is self-contained in the clutch collar. The press frame is multiple-rib design with highest tensile strength and extreme rigidity. Press is equipped with single-trip control which reportedly eliminates lost motion and provides safe positive single trip action, requires 1 to 2 lb operating pressure. *Kenco Mfg. Co.*

For more data circle No. 36 on postcard, p. 109.

Roll metallizers coat plastic film



Faster metallic coating of plastic film and sheeting, such as Mylar, acetate, condenser paper and thin sheet steel is possible with a new line of vacuum equipment for continuous roll metallizing. The equipment represents a new approach to the problem of continuous deposition of metal on a moving web of material. Units have only a single vacuum chamber and need only a single vacuum pumping system, making them more compact, taking less floor space. The continuous roll metallizers can coat material in widths of 6, 24, 36, 48, 54 or 60 in. at speeds up to 500 fpm. Rolls up to 24 in. diam can be accommodated and material ranging in thickness from 0.0005 to 0.0020 in. can be coated on a continuous basis. The units are said to deposit a brilliant, uniform coating of metal over the entire width of material with no dark or burned areas. *F. J. Stokes Machine Co.*

For more data circle No. 37 on postcard, p. 109.

Turn Page

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as a sign of smooth sailing . . .

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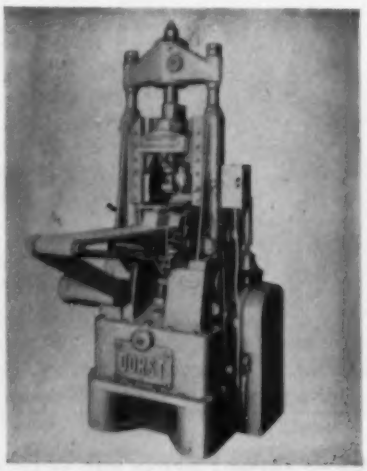
Powder metal press

New Dorst super press for powdered metals and ceramics features fully automatic operation. Its smooth toggle motion with fast approach to die cavity and slow final entry into die make it possible to produce parts of flawless structure. A device permits adjustable timing of the floating die in relation to top punch, thus producing parts of uniform density. Hydraulic cushion combined with pressure gage and electrical cut out switch disengages clutch in case of overpressing. A micrometer adjustment is provided for the die fill. Pickup mechanism lifts the pieces out of die cavity and transfers them onto conveyor belt which is synchronized with speed of machine. *Arnhold Ceramics, Inc.*



For more data circle No. 38 on postcard, p. 109.

Cold drawn tubing

A mirror-like inside surface finish, the latest refinement in cold-drawn electricweld steel tubing manufactured by J&L, is said to be superior to many honed finishes. The drawn-over-mandrel grade makes the tubing suitable for use, without machining, in many applications. It can carry heavy torsion loads; resists high-frequency vibration and has favorable weight-to-strength ratio in applications in which the loading is in all directions. Produced in OD sizes ranging from ¾ to 2¼ in. *Jones & Laughlin Steel Corp.*

For more data circle No. 39 on postcard, p. 109.

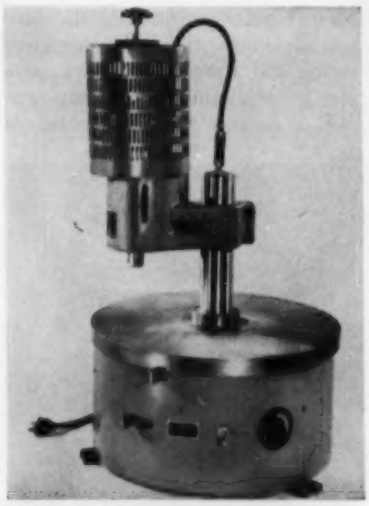
Quenching oil

Fast cooling rates in conventional quench setups are claimed for a new quenching oil. It has high oxidation stability and causes very little smoke and flame during normal hardening operations. In many cases, it is stated, Shell Voluta Oil 23 has made it possible to quench low carbon or low alloy steels in oil, where formerly water was necessary. Critical steels have shown the desired micro-structure after the oil quench. The oil's cooling rate is high enough initially to avoid unwanted transformation products; slow enough in the final stages to control dangers of warpage, cracking, or distortion. *Shell Oil Co.*

For more data circle No. 40 on postcard, p. 109.

Electric indexing table

For automatic work positioning a new electric indexing table features a central column on which tools may be mounted. The table is available as a packaged unit with an electric impact hammer which stakes, rivets or marks auto-

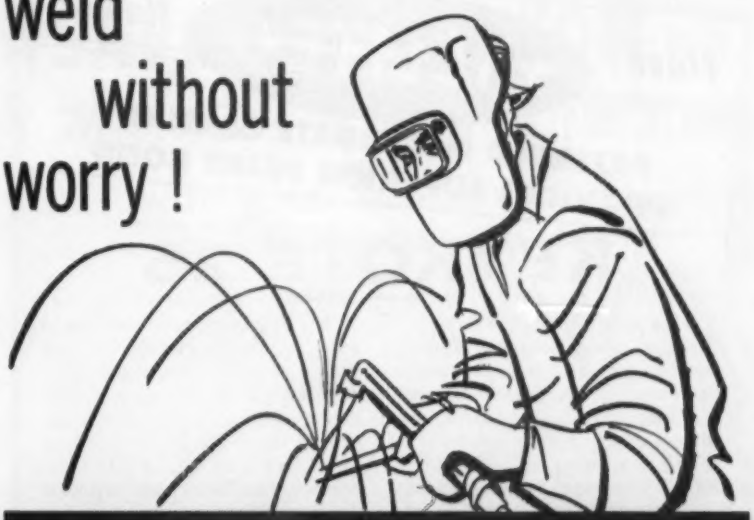


matically with the cycling of the table, or separately, for use with other automatic tools. A built-in automatic timer is continuously adjustable from 6 to 54 indexes per min and automatically triggers the tools when the table locks in position. A 1/20 hp gearhead motor, furnishes the power. *Black & Webster, Inc.*

For more data circle No. 41 on postcard, p. 109.

Turn Page

weld without worry !



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STAINLESS

Field fabrication or repair of stainless steel process equipment in corrosive service can be safely accomplished by welding . . . thanks to controlled extra low carbon stainless steel.

If you're dealing with cast shapes be sure to specify COOPER ALLOY ELC grade (in types 304 and 316) whenever welding is involved and subsequent heat treatment is not possible or practicable. Our thirty years of experience and leadership in the casting of high alloys is your guarantee of the right analysis every time.

Chemical Composition Ranges for Castings is:

C	0.03% max.*	Si	1.50% max.
Cr	17.0—20.0%	Mn	1.50% max.
Ni	9.0—13.0%	Mo	0.50% (304 ELC) 2.0—3.0% (316 ELC)

*ACI Grade CF-4 has 0.04% C max.

Mechanical Property Values in Castings are:

	Quench Annealed Condition	
	304 ELC	316 ELC
T. S. PSI	75,000	75,000
Yield Point PSI	35,000	40,000
Elongation %	55	55
Red of Area %	65	60
Hardness BHN	130	150

COOPER ALLOY

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Foundry Products Division

Flash! KELITE News!

PATENTED MOLYBDATE COATING PROVIDES SUPERIOR PAINT BOND

KEYKOTE 25

U.S. Patent No. 2,537,509

This stable dry powder is applied in water solution to low-carbon steel by spray process or immersion. Corrosion resistant equipment is not required; ordinary black iron is satisfactory for all processing. KELITE KEYKOTE 25 forms a ferromolybdate coating meeting all JAN-C-490, Grade 1, requirements.

Salt fog corrosion tests, bend tests, pressure-sensitive tape tests . . . prove the superiority of KEYKOTE 25 as a paint-bond coating. Photomicrographs show the fine crystalline character of KEYKOTED bonding surface, with superior resistance to spalling, abrasion, and impact.

KEYKOTE 25 will provide a tough, dense coating on mild steel at minimum cost.

Write or phone for Bulletin 135 which gives a detailed report on this exclusive patented product producing superior paint bonds.

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FOR LESS THAN $40 YOU GET 12 SETS, EACH SET GROUND READY TO GO

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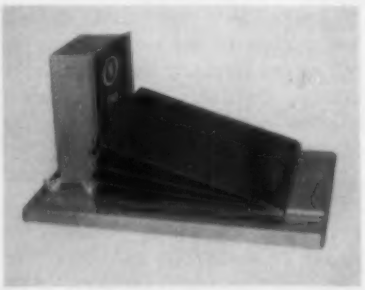
INSERT CHASERS SAVE UP TO 33%

Insert chasers are like safety razor blades: they cost so little that you can throw them away when dull. Or, for utmost economy, you can resharpen them over and over again. Only a flash grind is required. For less than $40 you get a dozen sets of ⅜–16 insert chasers, each set ground ready to go. You will be amazed at the quantity of threads they will cut, even to Class 3 specifications, with a minimum of downtime. FREE: "Selecting the Proper Die Head for the Job"

THE EASTERN MACHINE SCREW CORPORATION 21-41 Barclay St., New Haven, Conn.

Magnetic sheet floater

Low cost, magnetic sheet floater for the metalworking industry is a non-electric permanent magnetic device that separates stacked steel sheets automatically for faster, safer handling. Top sheets in a



stack are easily separated from those below, minimizing the possibility of feeding doubles, and thus protecting dies. Floaters are enclosed in stainless steel providing protection of the alnico magnet blocks. *Dings Magnetic Separator Co.*

For more data circle No. 42 on postcard, p. 109.

Tensile test bar die

New tools for making standard test specimens of various powdered metal and other mixes are completely self-contained. They employ a reverse stripping principle

to eliminate chipping or nicking the parts during ejection, and a floating die insures optimum density distribution throughout the part being pressed. Tools are made for use in any 30 to 50 ton laboratory hand press and are fast, efficient and simple. *Haller, Inc.*

For more data circle No. 43 on postcard, p. 109.

Bearing torque tester

Meeting Military Standard MIL-STD-206 and American Ordnance Assoc., a ball bearing torque tester will measure positive and negative torques, with a sensitivity as low as 7 mg-mm. With experience in analyzing records, an operator is

able to distinguish such torques as caused by rough bearing races, geometrical errors in races, Brinell marks, and separator friction. The unit accommodates almost any instrument ball bearing size. Overall accuracy is within 5 pct. *Sunshine Scientific Instrument.*

For more data circle No. 44 on postcard, p. 109.

Elevating bar feeder

Designed to handle short bars, studs, etc., up to 6 in. long, this unit takes the parts from the magazine, elevates them to the de-

sired height and presents them for feeding to the next production machine—making the machine fully automatic. Delivery rate can be varied from 1 to 12 pieces per min. *Feedall, Inc.*

For more data circle No. 45 on postcard, p. 109.

Turn Page

SAVE $155 PER TON with MicroRold® 430 Stainless Steel

7¾¢ Per Lb. Price Differential Between Types 430 and 302 Results In This Substantial Savings

By specifying MicroRold Type 430 stainless steel for suitable applications, stainless steel buyers can take advantage of the 7¾¢ per pound difference in price between Type 430 and Type 302 stainless. A saving of $155 per ton merits consideration. Type 430 is a straight chromium-stainless with a nominal composition of 17% Chrominum. During the Korean conflict, Type 430 was used extensively, due to government restriction on nickel-bearing stainless.

WIDE USE FOR TYPE 430

While Type 430 does not possess the same degree of corrosion resistance as Type 302, it has proven very satisfactory in a wide range of mild corrosion applications, both interior and exterior. It lends itself to a multitude of decorative and functional uses combining all the advantages and qualities of stainless steel—beauty, strength, corrosion resistance, long life, workability and ease of maintenance. Considering the price advantage, with no sacrifice in quality when applied properly, stainless steel buyers will find MicroRold Type 430 a worthwhile material for an impressive number of stainless steel applications.

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Made of highest standards and uniform quality thus insuring maximum service. *Since 1903*

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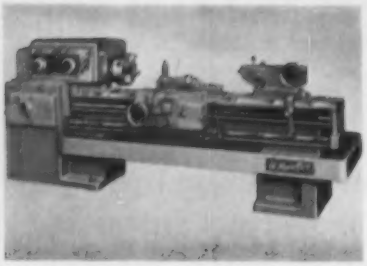


Featured as new from headstock to tailstock

New Powerturn lathes have a computing head which merely requires the setting of two dials and correct settings for the three speed shifting levers are instantly indicated. All controls and control handles have been regrouped for convenience and shaped for fumble-free operation. A built-in hp ammeter indicates amount of lathe's capacity being utilized. A 16-in. Toolmaker model at the Machine Tool Show will be in operation chasing a lead screw to precision tolerance. *Lodge & Shipley Co.*

For more data circle No. 46 on postcard, p. 109.

Drilling machines for production, toolroom

New 16-in. Royal Model LE drilling machines are available in single spindle bench and floor models, and single and multiple spindle production bench models. They are especially suitable for production, toolroom, maintenance, and general purpose duty. Rated at ½-in. capacity in cast iron with an 1800 rpm motor, the 16-in. Royals are equipped with a 0 to ½ in. capacity chuck mounted on a taper plug spindle. They are shipped complete with electrical controls including overload protection, motor mount, V belt, pulleys for spindle and motor, and contour-fitting belt guard as standard equipment. The spindle is full-floating on four precision, sealed, lifetime lubricated bearings. Five spindle speeds are provided ranging from 410 to 4840 with an 1800 rpm motor; or 342 to 4033 with a 1500 rpm motor. *Cincinnati Lathe & Tool Co.*

For more data circle No. 47 on postcard, p. 109.

IF your production calls for circles or segments from angles, flats, rounds or other shapes in quantities, the THOMAS ANGLE BENDER may be the solution to *your* need for *greater production at less cost!*

BULLETIN 314
describes the four sizes and is yours for the asking. Write for it now!

THOMAS
MACHINE MANUFACTURING CO.
PITTSBURGH 33, PA.

50

PUNCHES · SHEARS · PRESSES · BENDERS · SPACING TABLES

Metal shipping container

An all-metal band-box consists of a compact combination steel pallet, container sides and top, which is fully nestable in its component parts, lightweight, strong and durable. The cover aids to insure cleanliness and protection of contents during shipment or extended

storage. This steel container is easily set up in minutes. All parts of a given size are interchangeable. Three standard sizes weigh 85, 99.5 and 122 lb each. The unit has been tested to support static loads in excess of 10,000 lb; the bottom itself, by test, is stated to have supported over 60,000 lb. *Ackermann Mfg. Co.*

For more data circle No. 48 on postcard, p. 109.

Abrasive cutting machine

Called the Speed-Cut, a new machine is made for metalworking plants or contractors for cutting all shapes and types of materials. Its high speed abrasive wheel cuts through soft or hard metals with ease, leaving a smooth surface that

seldom needs reworking. The manufacturer claims that a single man operating a Speed-Cut abrasive cutoff machine can do all the cutting necessary for an installation crew of 40 to 80 men. Variance of shape or material is no hindrance to the machine. Thin-walled steel aircraft tubing, soil pipe, galvanized steel, angles, structural members or solid bars can be cut with efficient speed. *Beaver Pipe Tools, Inc.*

For more data circle No. 49 on postcard, p. 109.

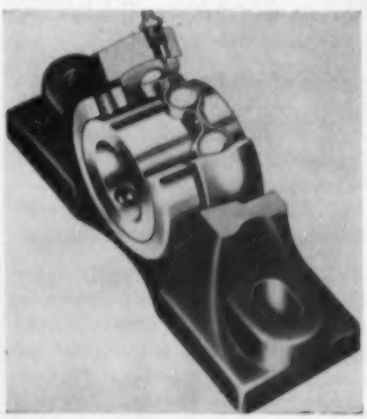
Water hardness test kit

The hardness of water delivered by home or industrial water softeners can be measured to the nearest 0.2 grain per gal in an on-the-spot test that takes only 1 min. New pocket-size Zeo-Kit enables quick determination of when the softeners need regenerating. The reagent is added to the water sample which then turns first red and then blue. Number of drops of reagent needed to turn the sample blue determines the hardness of the water. *Calgon, Inc.*

For more data circle No. 50 on postcard, p. 109.

Ball bearings

New series of ball bearings designed for medium duty service embody all the features of the SC ball bearings. In addition the SCM bearings provide more load-carrying capacity and are available in



larger shaft sizes. The new line includes both ball bearing pillow blocks and ball bearing flange cartridge mounts. Outstanding feature of both is the metal backed synthetic seals that are mechanically anchored and cannot be blown under grease gun pressure. *Dodge Mfg. Corp.*

For more data circle No. 51 on postcard, p. 109.

EFFICIENT PICKLING WITH
RODINE
PICKLING ACID INHIBITORS
SAVES STEEL
SAVES ACID
SAVES MONEY
Use "Rodine" for improved pickling and increased production!
"Rodine" more than pays for itself in savings of acid and metal.
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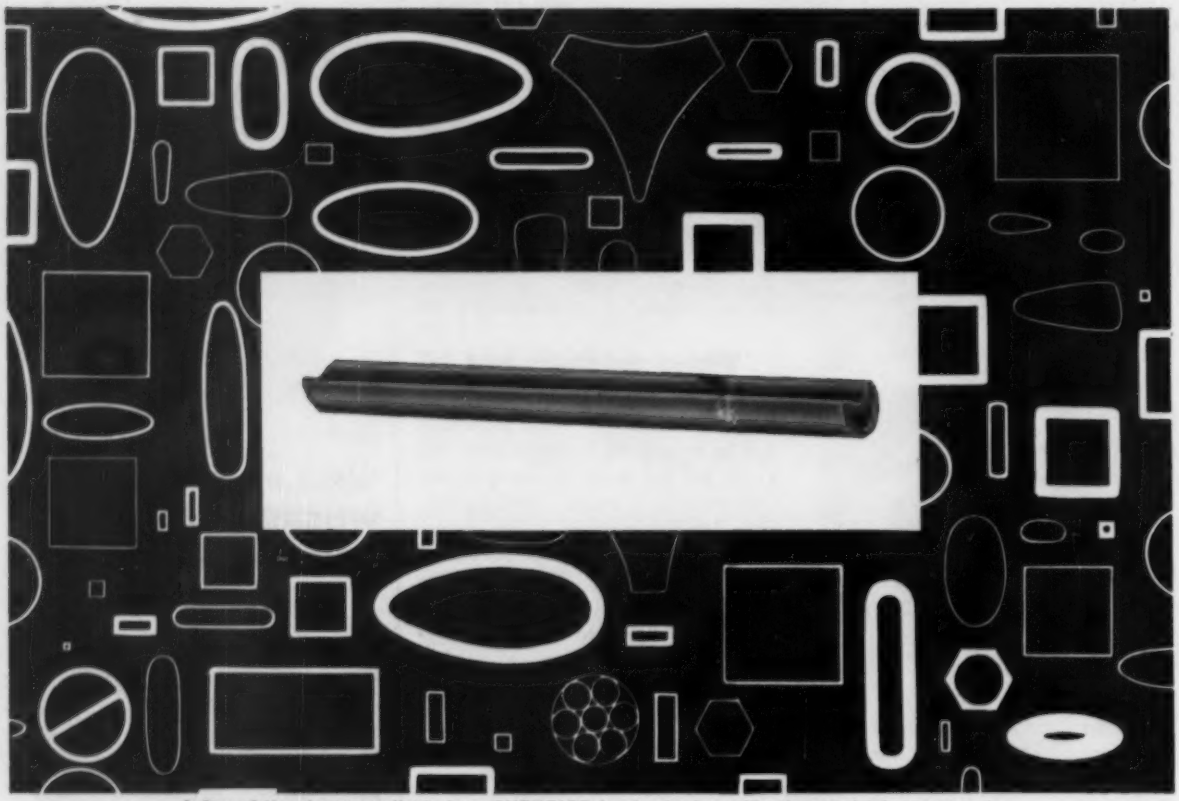


A few of the shapes available from SUPERIOR in standard specifications and tolerances or to your own design. The tube in the foreground is a gun drill shank made from 4130 alloy steel.

Save time and money on special shaped tubing

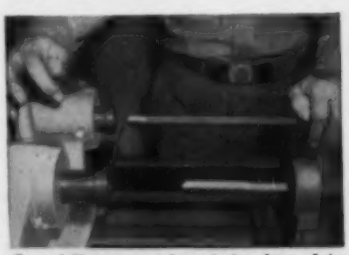
"SUPERIOR" TUBING IS IMMEDIATELY AVAILABLE IN A WIDE RANGE OF SHAPES, FORMS, ALLOYS

Many manufacturers have discovered that SUPERIOR's ability to supply as standard what many firms consider specialty tubing saves them trouble, time and money. SUPERIOR makes round, square, oval, rectangular, elliptical and flat oval tubing, for instance. It makes capillary tubing, pointer tubing, electronic tubing, telescopic sizes, large OD-light wall tubing. Over 55 analyses are available in carbon, alloy and stainless steels; in nickel and nickel alloys; in beryllium copper, titanium, zirconium.

The gun drill shank shown above and on the right is a good example of SUPERIOR's ability to supply unusual shapes. This newly rediscovered method of producing close-tolerance high-finish holes demands straight, rigid, accurate shanks with a 110° V-groove. SUPERIOR can produce such a shape—and others—in a fraction of the time and cost it would take a customer to form his own.

If you're having difficulty getting the kind of tubing you want, SUPERIOR can undoubtedly help you. Write for your free copy of Bulletin 40—*A Guide to the Selection and Application of Superior Tubing*. SUPERIOR TUBE COMPANY, 2004 Germantown Ave., Norristown, Pa. *On the West Coast:* Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif.

Turks-head rollers converting a round section of SUPERIOR tubing into the typical elliptical shape for a Bourdon gage tube.



Gun drills can produce holes from 4 to 230 diameters or more in 4 times the speed of conventional drilling methods or better. Holes so produced are straight and round to tolerances of 0.0002" or less and wall finishes are 7 mu-in or better.

All analyses available in .010" to ⅝" OD; certain analyses in light walls up to 2½" OD

Superior Tube

The big name in small tubing

The Iron Age SUMMARY . . .

Steel producers are blue-penciling consumer orders . . . Old and new customers are suffering . . . Maintenance, hot weather, vacations, plaguing mills.

Blue-Pencil Treatment . . . Steel producers are wielding a heavy blue pencil on customer allotments in a desperate effort to restore a semblance of order to the market. Both old and new customers are getting the treatment.

The mills are going through one of the worst periods in recent years from a production and customer relations standpoint. It's as hard on them as it is on consumers.

Incoming Orders Heavy . . . What it boils down to is this: The steel companies were caught flat-footed by the continued strength of a market they thought would ease during the summer. Incoming orders are still running 10 to 15 pct ahead of capacity.

Meanwhile, they were hit by a short-lived strike over union contract demands, a maintenance problem of major proportions, a record-breaking heat wave, and summer vacations.

Ingot Rate Suffering . . . The ingot rate since the strike has reflected the cumulative effect of these problems. Operations this week are scheduled at 89 pct of capacity, while last week the mills produced at only 88.5 pct.

Maintenance losses extend beyond that of raw iron and steel. It has hit rolling and slabbing mills as well—to the point where some producers are attempting to borrow steel from other mills and in some cases have had slabs finished by other producers.

Orders Are Firm . . . THE IRON AGE has learned that there is no "water" in current demand. If there were any, elimination of October tonnages plus cutbacks in allotments would have taken care of the situation. It hasn't.

Seriousness of the steel market situation, evident as it is today, will be brought home with a bang after Labor Day.

The Outlook . . . It will show: (1) Previous steel promises were unrealistic, (2) long-time suppliers will be unable to satisfy old customers, (3) warehouses, already in trouble themselves, will have more trouble obtaining their requirements from the mills, and (4) a tight steel situation rivaling the tough second quarter.

There has been no gray market of any consequence as yet, due largely to the close balance between steel ingot and finishing capacity.

Steel Output, Operating Rates

	This Week†	Last Week	Month Ago	Year Ago
Production (Net tons, 000 omitted)	2,150	2,135	2,328	1,474
Ingot Index (1947—49=100)	133.5	137.2	144.8	91.8
Operating Rates				
Chicago	95.0	92.0	96.0	66.0*
Pittsburgh	98.0	94.0	92.0*	61.0*
Philadelphia	94.0	94.0	94.0	56.0
Valley	94.0	92.0	95.0	58.0
West	95.1	98.0	91.8*	76.0*
Detroit	90.0	90.0	85.0*	68.0
Buffalo	100.0*	100.0*	86.0	57.0
Cleveland	100.0	95.2	99.0	55.0*
Birmingham	23.0	21.0	94.0	58.0
S. Ohio River	77.0	73.1	81.6*	72.0
Wheeling	100.0	95.0	99.0*	83.0*
St. Louis	98.0	98.0	92.0	52.0
Northeast	85.0	85.0	87.0	...
Aggregate	89.0	88.5	94.0	62.0

*Revised. †Tentative

Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	5.174	5.174	5.178	4.801
Pig iron (Gross ton)	$59.09	$59.09	$59.09	$56.59
Scrap, No. 1 hvy (gross ton)	$44.00	$43.33	$38.50	$27.83
Nonferrous				
Aluminum, ingot	23.20	23.20	23.20	22.20
Copper, electrolytic	36.00	36.00	36.00	30.00
Lead, St. Louis	14.80	14.80	14.80	13.80
Magnesium, ingot	29.25	29.25	29.25	27.75
Nickel, electrolytic	67.67	67.67	67.67	63.08
Tin, Straits, N. Y.	97.00	97.50	95.75	93.375
Zinc, E. St. Louis	12.50	12.50	12.50	11.00

STEEL PRODUCT MARKETS

Freight Rate Hikes Likely

Rail, truck rate hikes on steel product shipments in East, No. Central states seen likely . . . ICC examiner proposal under study . . . Heavy demand for major products continues.

◆ FREIGHT RATE increases on shipments of sheet, strip, coils, and other steel products by rail and truck in the East and North Central states are proposed by an Interstate Commerce Commission examiner.

Boosts of up to 12¢ per 100 lb in the minimum rates for shipments up to 750 mi are recommended. Reason given for the recommendation is that rail and highway carriers are competing "destructively" at current rates.

The examiner also contends that both the railroads and truckers need additional revenue and that steel companies will not suffer from the higher freight charges. The carriers, it's contended, can't cut costs, partly because of heavier employee wage burdens.

Carriers aren't agreed on the need for higher rates, according to ICC. The railroads reportedly find their rate structure adequate and argue against increases on steel items. Approval by the agency is needed before the examiner's proposals can become effective.

Nut and bolt prices have been increased 7 to 9 pct. Increases began about two weeks after steel price changes. They cover practically all bolts, nuts, screws and rivets. They also include changes in the quantities for bulk prices of machine screws and stove bolts.

U. S. Steel Products Div. has announced new prices on its line of steel drums and pails.

The price revisions represent an average increase of approximately 7½ pct.

SHEETS AND STRIP . . . Demand for sheet in **Detroit** is becoming desperate. Heavy carryovers into fourth quarter are expected to push into first quarter of next year. Example: One mill reports a customer ordered 25 tons of sheet for delivery in Oct., Nov. and Dec. The mill told him he would get delivery in Nov., Dec. and Jan. In **Cleveland**, stainless carryovers are now hitting 3-4 weeks, highest in recent years, and word is that nickel is becoming increasingly critical because of stepped up military demand. Nickel-bearing scrap is also drying up and customer inventories have been drained to fill in production requirements. **Pittsburgh** sheet and strip customers are getting deferments on orders up to four months. At least two major producers have stopped accepting fourth quarter orders on HR sheets. Mills are reducing tonnages on CR orders for Nov. and Dec.; have cut out Oct. entirely.

BARS . . . Mills are cutting fourth quarter quotas on bar products in **Pittsburgh**, but as yet the cuts aren't serious enough to worry consumers. Although finishing facilities are adequate, strong customer demand for plate, sheet, and structurals isn't leaving enough raw ingots to meet production demand on bars. **West Coast** consumers are reportedly eating up all the bars they can get. Demand looks solid well into first quarter 1956. One bar warehouse in **Detroit** reports that last month's business was the best in two years. Indications are that the Big Three automakers are coming in for good size tonnages of bars. A leading warehouse says that it now takes three months instead of 30 days to replace the amount of steel being sold.

STRUCTURALS AND SHAPES . . . The current building boom in the **Detroit** area has put a definite pinch on wide-flange beams. These are reportedly sold out for the year. **West Coast** demand for structurals has stepped up the sales tempo with the highway and building construction industries prime consumers. Railroad demand for structurals in **Pittsburgh** has only served to tighten an already tight situation. Railroads are getting good treatment from the mills despite their late start in placing orders.

PLATE . . . Consumer demand for plate in **Detroit** is extremely heavy since two mills stopped making it. Deliveries are expected to lag anywhere from 6 to 8 weeks. October ordering of plate in **Pittsburgh** has already been eliminated from fourth quarter, and now quota cuts from Nov. and Dec. are beginning to appear.

WIRE PRODUCTS . . . In **Cleveland** jobbers' wire fabric prices are rising fast owing to demand exceeding supply and the seasonal time factor. Certain types and sizes of manufacturers wire are still available for Oct. in **Detroit**. Merchant wire is still seasonally low. **Pittsburgh** also reports a seasonal slump in merchant wire, but both construction and manufacturers wire are booked to capacity well into fourth quarter.

PIPE AND TUBING . . . Oil country quotas for fourth quarter are about exhausted in **Pittsburgh**, and both producers and consumers are now looking to 1956. Four-inch and under welded pipe is most readily available with Sept. and Oct. deliveries possible.

GENERAL . . . The strike of 100 trainmen on a railroad serving Tennessee Coal & Iron Div. of U. S. Steel Corp. (IRON AGE, Aug. 4, p. 128) reduced the district's ingot production by more than 70,000 tons per week.

Purchasing Agent's Checklist:

GOV'T: Fast tax write-offs are facing a challenge . . . . . p. 47

CONSTRUCTION: Rebars will be one of tightest 4th Quarter items . . . . . p. 49

WAREHOUSES: They're finally admitting a business boom . . . . p. 52

FINANCIAL: CED Policy Statements hit the big spending issues . . p. 53

MACHINE TOOLS: Downtime, work stoppage can mean profits lost . . . . . p. 75

Comparison of Prices

(Effective Aug. 9, 1955)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	Aug. 9 1955	Aug. 2 1955	July 12 1955	Aug. 10 1954
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.325¢	4.325¢	4.325¢	4.05¢
Cold-rolled sheets	5.325	5.325	5.325	4.95
Galvanized sheets (10 ga.)	5.85	5.85	5.85	5.45
Hot-rolled strip	4.325	4.325	4.325	4.05
Cold-rolled strip	6.29	6.29	6.45	5.82
Plate	4.52	4.52	4.50	4.237
Plates wrought iron	9.30	9.30	9.30	9.30
Stainl's C-R strip (No. 302)	44.50	44.50	44.50	41.50
Tin and Ternplate: (per base box)				
Tinplate (1.50 lb.) coke	$9.05	$9.05	$9.05	$8.95
Tinplate, electro (0.50 lb.)	7.75	7.75	7.75	7.65
Special coated mfg. terns	7.85	7.85	7.85	7.75
Bars and Shapes: (per pound)				
Merchant bars	4.65¢	4.65¢	4.65¢	4.312¢
Cold-finished bars	5.90	5.90	5.90	5.40
Alloy bars	5.65	5.65	5.65	5.075
Structural shapes	4.60	4.60	4.60	4.25
Stainless bars (No. 302)	38.25	38.25	38.25	35.50
Wrought iron bars	10.40	10.40	10.40	10.40
Wire: (per pound)				
Bright wire	6.25¢	6.25¢	6.25¢	5.75¢
Rails: (per 100 lb.)				
Heavy rails	$4.725	$4.725	$4.725	$4.45
Light rails	5.65	5.65	5.65	5.35
Semifinished Steel: (per net ton)				
Rerolling billets	$68.50	$68.50	$68.50	$64.00
Slabs, rerolling	68.50	68.50	68.50	64.00
Forging billets	84.50	84.50	84.50	78.00
Alloy blooms, billets, slabs	96.00	96.00	96.00	86.00
Wire Rod and Skelp: (per pound)				
Wire rods	5.025¢	5.025¢	5.025¢	4.675¢
Skelp	4.225	4.225	4.225	3.90
Finished Steel Composite: (per pound)				
Base price	5.174¢	5.174¢	5.178¢	4.801¢

	Aug. 9 1955	Aug. 2 1955	July 12 1955	Aug. 10 1954
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$63.69	$63.69	$63.69	$61.19
Foundry, Valley	59.00	59.00	59.00	56.50
Foundry, Southern, Cin'ti	62.93	62.93	62.93	60.43
Foundry, Birmingham	55.38	55.38	55.38	52.88
Foundry, Chicago	59.00	59.00	59.00	56.50
Basic, del'd Philadelphia	62.77	62.77	62.77	60.27
Basic, Valley furnace	58.50	58.50	58.50	56.00
Malleable, Chicago	59.00	59.00	59.00	56.50
Malleable, Valley	59.00	59.00	59.00	56.50
Ferromanganese‡, cents per lb.	9.50¢	9.50¢	9.50¢	10.00¢

‡ 74-76 pct Mn base.

Pig Iron Composite: (per gross ton)				
Pig iron	$59.09	$59.09	$59.09	$56.59
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$45.00	$45.00	$39.50	$29.50
No. 1 steel, Phila. area	45.50	43.50	39.50	24.50
No. 1 steel, Chicago	41.50	41.50	36.50	29.50
No. 1 bundles, Detroit	38.50	38.50	32.50	23.50
Low phos., Youngstown	46.50	46.50	40.50	33.00
No. 1 mach'y cast, Pittsburgh	44.50	44.50	43.50	42.50
No. 1 mach'y cast, Philadel'a	46.50	45.50	44.50	39.50
No. 1 mach'y cast, Chicago	52.50	52.50	48.00	39.50
Steel Scrap Composite: (per gross ton)				
No. 1 heavy melting scrap	$44.00	$43.33	$38.50	$27.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$13.25	$13.25	$13.25	$14.38
Foundry coke, prompt	16.25	16.25	16.25	16.75
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	36.00	36.00	36.00	30.00
Copper, Lake, Conn.	36.00	36.00	36.00	30.00
Tin, Straits, New York	97.00	97.50*	95.75	93.375
Zinc, East St. Louis	12.50	12.50	12.50	11.00
Lead, St. Louis	14.80	14.80	14.80	13.80
Aluminum, virgin ingot	23.20	23.20	23.20	22.20
Nickel, electrolytic	67.67	67.67	67.67	63.08
Magnesium, ingot	29.25	29.25	29.25	27.75
Antimony, Laredo, Tex.	28.50	28.50	28.50	28.50

† Tentative. ‡ Average. * Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

PIG IRON

Dollars per gross ton, f.o.b. subject to switching charges.

←To identify producers, see Key on P. 148→

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Bethlehem *B3*	60.50	61.00	61.50	62.00	.....
Birdsboro, Pa. *B6*	60.50	61.00	61.50	62.00	.....
Birmingham *R3*	54.50	55.00	.....	.....	.....
Birmingham *W9*	54.50	55.00	59.00	.....	.....
Birmingham *U4*	54.50	55.00	59.00	.....	.....
Buffalo *R3*	58.50	59.00	59.50	.....	.....
Buffalo *H1*	58.50	59.00	59.50	.....	.....
Buffalo *W6*	58.50	59.00	59.50	60.00	.....
Chester *C17*	54.50	55.00	55.50	.....	.....
Chicago *I4*	58.50	59.00	59.00	59.50	.....
Cleveland *A5*	58.50	59.00	59.00	59.50	63.50
Cleveland *R3*	58.50	59.00	59.00	.....	.....
Daingerfield *L3*	55.00	55.00	55.00	.....	.....
Duluth *I4*	58.50	59.00	59.00	59.50	.....
Erie *I4*	58.50	59.00	59.00	59.50	.....
Everett *M6*	.....	61.00	61.50	.....	.....
Fontana *K1*	64.50	65.00	.....	.....	.....
Geneva, Utah *C7*	58.50	59.00	.....	.....	.....
Granite City *G2*	60.40	60.90	61.40	.....	.....
Hubbard *Y1*	.....	.....	59.00	.....	.....
Minnequa *C6*	60.50	61.00	61.50	.....	.....
Monessen *P6*	58.50	.....	.....	.....	.....
Neville Is. *P4*	58.50	59.00	59.00	.....	.....
N. Tonawanda *T1*	.....	59.00	59.50	.....	.....
Pittsburgh *U1*	58.50	.....	.....	59.50	.....
Sharpsville *S3*	58.50	59.00	59.00	59.50	.....
So. Chicago *R3*	58.50	.....	59.00	.....	.....
Steelton *B3*	60.50	61.00	61.50	62.00	66.50
Swedeland *A2*	60.50	61.00	61.50	62.00	.....
Toledo *I4*	58.50	59.00	59.00	59.50	.....
Troy, N. Y. *R3*	60.50	61.00	61.50	62.00	66.50
Youngstown *Y1*	.....	.....	59.00	59.50	.....

* **DIFFERENTIALS:** Add, 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct); 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional, 0.25 pct nickel.

Silvery Iron: Buffalo, *H1*, $68.75; Jackson, *J1, G1*, $67.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add $1 per ton for 0.75 pct or more phosphorus. Add 75¢ for each 0.50 pct Manganese over 1.0 pct. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

* Unrevised.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots, rerolling	17.75	19.00	—	20.25	31.50	25.00	37.75	15.00	—	15.25
Slabs, billets, rerolling	22.25	24.75	26.75	26.00	40.25	32.00	49.50	19.50	—	19.75
Forg. discs, die blocks, rings	—	—	—	—	—	—	—	—	—	—
Billets, forging	—	32.00	34.75	33.75	51.25	38.25	58.00	25.50	26.00	26.00
Bars, wires, structurals	38.00	38.25	41.00	40.25	60.75	45.25	68.00	30.50	31.00	31.00
Plates	—	40.25	—	43.00	64.00	49.25	73.25	31.75	—	32.25
Sheets	44.25	44.50	—	47.25	68.25	54.25	82.00	36.25	—	36.75
Strip, hot-rolled	32.00	34.50	—	37.25	58.25	44.25	66.75	—	—	—
Strip, cold-rolled	41.00	44.50	—	47.25	68.25	54.25	82.00	36.25	—	36.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11*; Brackenridge, Pa., *A3*; Butler, Pa., *A7*; McKeesport, Pa., *U1*; Washington, Pa., *W2, J2*; Baltimore, *E1*; Middletown, O., *A7*; Massillon, O., *R3*; Gary, *U1*; Bridgeville, Pa., *U2*; New Castle, Ind., *I2*; Ft. Wayne, *J4*; Philadelphia, *D5*.

Strip: Midland, Pa., *C11*; Cleveland, *A5*; Carnegie, Pa., *S9*; McKeesport, Pa., *F1*; Reading, Pa., *C2*; Washington, Pa., *W2*; W. Leechburg, Pa., *A3*; Bridgeville, Pa., *U2*; Detroit, *M2*; Canton-Massillon, O., *R3*; Middletown, O., *A7*; Harrison, N. J., *D3*; Youngstown, *C5*; Sharon, Pa., *S1*; Butler, Pa., *A7*; Wallingford, Conn., *U3*; .25¢ per lb higher; *W1* (.25¢ per lb higher): New Bedford, Mass., *R6*.

Bar: Baltimore, *A7*; Duquesne, Pa., *U1*; Munhall, Pa., *U1*; Reading, Pa., *C2*; Titusville, Pa., *U2*; Washington, Pa., *J2*; McKeesport, Pa., *U1, F1*; Bridgeville, Pa., *U2*; Dunkirk, N. Y., *A3*; Massillon, O., *R3*; Chicago, *U1*; Syracuse, N. Y., *C11*; Watervliet, N. Y., *A3*; Waukegan, *A5*; Canton, O., *T5*; Ft. Wayne, *I4*; Philadelphia, *D5*; Detroit, *R5*.

Wire: Waukegan, *A5*; Massillon, O., *R3*; McKeesport, Pa., *F1*; Ft. Wayne, *J4*; Harrison, N. J., *D3*; Baltimore, *A7*; Dunkirk, *A3*; Monessen, *P1*; Syracuse, *C11*; Bridgeville, *U2*.

Structurals: Baltimore, *A7*; Massillon, O., *R3*; Chicago, Ill., *J4*; Watervliet, N. Y., *A3*; Syracuse, *C11*.

Plates: Brackenridge, Pa., *A3*; Chicago, *U1*; Munhall, Pa., *U1*; Midland, Pa., *C11*; New Castle, Ind., *I2*; Middletown, *A7*; Washington, Pa., *J2*; Cleveland, Massillon, *R3*; Coatesville, Pa., *C15*; Philadelphia, *D5*.

Forged discs, die blocks, rings: Pittsburgh, *C11*; Syracuse, *C11*; Ferndale, Mich., *A3*; Washington, Pa., *J2*.

Forgings billets: Midland, Pa., *C11*; Baltimore, *A7*; Washington, Pa., *J2*; McKeesport, *F1*; Massillon, Canton, O., *R3*; Watervliet, *A3*; Pittsburgh, Chicago, *U1*; Syracuse, *C11*; Detroit, *R5*.

East Leads Strong Market

Philadelphia price of No. 1 heavy melting advances another $2 . . . Tight supply limits activity in other major centers . . . Composite up to $44.00.

◆ PRICE advances in the East marked a strong, tight scrap picture. Philadelphia reported the best steelmaking grades up $2 with broad gains in all but blast furnace grades.

In other areas, prices held generally firm. Mill resistance appeared to be slowing activity in some sections. Also brokers are a little wary about extensive new commitments. Many were caught in the rising market with buying prices pushing sales figures.

Biggest factor though is still the relative shortage of scrap. Supply may loosen a little in the closing weeks of summer but automotive scrap generation figures to decline more before it picks up.

Reflecting the Eastern increase, THE IRON AGE Composite for No. 1 heavy melting rose 67¢ to $44.

An Iron and Steel scrap export task force failed to agree on definite recommendations regarding scrap exports. This leaves it up to the government and the feeling is that the State Dept. will override any Commerce Dept. proposals in the direction of tough scrap export curbs.

Preliminary figures for January-June of this year place scrap exports at 2,595,140 net tons. For all of last year, the total was 1,588,110 tons. Scrap men contend that there is still enough scrap in the country to support capacity mill operations.

Pittsburgh . . . The scrap market is fairly steady with brokers beginning to pull out of the market and some buildup of scrap in dealers' yards. Many of the brokers who sold short on the old $35 orders have either completed or greatly reduced their commitments to the mills. It is reported that some brokers are still buying No. 1 heavy melting fairly heavily to be long on the next major scrap purchase expected very soon. Mill purchases of No. 2 bundles have been reported at $38. Blast furnace grades advanced as the latest transactions for machine shop turnings were up $3.

Chicago . . . Despite a mild softness in scattered grades, Chicago's scrap market remained basically strong last week. Turnings weakened slightly as brokers sought to readjust the old price differential between machine shop turnings and shoveling turnings. The machine shop price had gone to $30 on a restricted sale but present buying does not sustain that price level.

Philadelphia . . . The current upward spiral in the prices of most major grades continues with No. 1 heavy melting resting at $46 topside. No. 2 heavy melting is up 50¢ to an even $40 tops, with the price of No. 2 bundles up $1 over last week to a new top level of $37. Blast furnace grades are holding their own at the moment, with a major portion of other grades reflecting on the average $1 to $2 price increases.

New York . . . The market continues strong and tight with short supplies the only limiting factor on activity. No. 2 bundles advanced $2. Shoveling turnings and mixed borings and turnings were up $1. No. 1 machinery cast advanced $2 on the topside.

Detroit . . . Activity slowed down to a walk here this week and indications are that the mills are trying to soften the currently high prices before they do any buying. Brokers have dropped out of the market, indicating that delinquent orders have now been covered. There is a possibility that the market could drop within the next 2 weeks, but only briefly.

Cleveland . . . The mid-month lull has set in in steelmaking scrap in Cleveland and the Valley. Secondary grades are still weak with some going for foundry steel after curing. Dealers are attempting to increase size of new orders. Only new sales in area last week were foundry orders within quoted price range.

Birmingham . . . Considerable steel scrap, especially No. 2 bundles, is being shipped by rail and barge from this district to northern mills. In addition, exporters are pushing for scrap wherever they can find it and are reported offering premiums for tonnage lots. Mills in the district, however, made most of their purchases the last week in July and buying this week was light. Demand for cast and foundry grades is strong.

St. Louis . . . Correct prices in last week's IRON AGE for machine shop turnings should have been $23-24, and for cast iron borings $27-28. Receipts of scrap after the recent sharp price advances, are reported to be equal to the melt, despite the warm weather. Standard steel car axles were $1.50 higher on sales but otherwise prices remain unchanged. The market is said to be not quite so strong as it has been in the last several weeks.

Cincinnati . . . Barge shipments to Pittsburgh were continuing on old orders with little new activity last week. Foundries showing slight pickup but no trend.

Buffalo . . . Strong tendencies dominate scrap market here as dealers await new orders from area's top mill. Prices of steelmaking grades are nominally unchanged as the leading mill has delayed placement of new orders for current month. Low phos moved up $2 because of higher processing costs. Railroad items also improved.

Boston . . . Area mills are leading buyers in a market that continues to show good activity. Prices of No. 2 steelmaking grades advanced 50¢ to $1. Blast furnace grades made scattered gains.

West Coast . . . Prices steady in Seattle, San Francisco and Los Angeles. Heavy cast scrap buying in the Los Angeles market by busy San Francisco Bay Area foundries. Supply in Los Angeles is getting very tight.

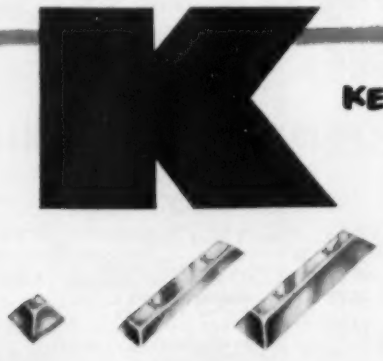
JUNIOR HAS THE ANSWER

[or why it pays to use KEOKUK Silvery Pig]

Chief Keokuk:
"Me show Little Chief how portage canoe cross country. Him heap lazy—run sitting down!"

Princess Wenatchee:
"As usual, Junior has the right answer!"

You, too, can have the right answer when it comes to controlling metal quality and costs. You can, that is, if you use Keokuk Silvery Pig Iron . . . the iron that holds silicon loss to a minimum because it's a less concentrated form of silicon. And Keokuk Silvery Pig never varies in composition . . . it's *always* uniform. Remember the name, KEOKUK Silvery Pig . . . charge it by piece or by magnet.



KEOKUK ELECTRO-METALS COMPANY
KEOKUK, IOWA
Wenatchee Division, Wenatchee, Washington

SALES AGENT: MILLER AND COMPANY
332 S. Michigan Avenue, Chicago 4, Illinois
3504 Carew Tower, Cincinnati 2, Ohio
8230 Forsyth Blvd., St. Louis 24, Missouri

Keokuk Silvery . . . the superior form of silicon introduction . . . available in 60 and 30 pound pigs and 12½ pound piglets...in regular or alloy analysis. Keokuk also manufactures high silicon metal.

Scrap Prices *(Effective Aug. 9, 1955)*

Pittsburgh

No. 1 hvy. melting	$45.00
No. 2 hvy. melting	42.00
No. 1 bundles	45.00
No. 2 bundles	$37.00 to 38.00
Machine shop turn.	27.50 to 28.50
Mixed bor. and ms. turns.	27.50 to 28.50
Shoveling turnings	30.50 to 31.50
Cast iron borings	30.50 to 31.50
Low phos. punch'gs, plate	47.00 to 48.00
Heavy turnings	42.00 to 43.00
No. 1 RR. hvy. melting	47.00 to 48.00
Scrap rails, random lgth.	50.50 to 51.50
Rails 2 ft and under	54.00 to 55.00
RR. steel wheels	51.50 to 52.50
RR. spring steel	51.50 to 52.50
RR. couplers and knuckles	51.50 to 52.50
No. 1 machinery cast	44.00 to 45.00
Cupola cast	41.00 to 42.00
Heavy breakable cast	35.00 to 36.00

Chicago

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 factory bundles	44.00 to 45.00
No. 1 dealers' bundles	41.00 to 42.00
No. 2 dealers' bundles	31.00 to 32.00
Machine shop turn.	28.00 to 29.00
Mixed bor. and turn.	30.00 to 31.00
Shoveling turnings	30.00 to 31.00
Cast iron borings	30.00 to 31.00
Low phos. forge crops	48.00 to 49.00
Low phos., punch'gs, plate	46.00 to 47.00
Low phos. 3 ft and under	45.00 to 46.00
No. 1 RR. hvy. melting	47.00 to 48.00
Scrap rails, random lgth.	54.00 to 55.00
Rerolling rails	64.00 to 65.00
Rails 2 ft and under	61.00 to 62.00
Locomotive tires, cut	45.00 to 46.00
Cut bolsters & side frames	48.00 to 49.00
Angles and splice bars	53.00 to 54.00
RR. steel car axles	56.00 to 57.00
RR. couplers and knuckles	50.00 to 51.00
No. 1 machinery cast	52.00 to 53.00
Cupola cast	47.00 to 48.00
Heavy breakable cast	39.00 to 40.00
Cast iron brake shoes	37.00 to 39.00
Cast iron car wheels	43.00 to 44.00
Malleable	51.00 to 52.00
Stove plate	39.00 to 40.00

Philadelphia Area

No. 1 hvy. melting	$45.00 to $46.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 bundles	45.00 to 46.00
No. 2 bundles	35.00 to 37.00
Machine shop turn.	27.00 to 28.00
Mixed bor. short turn.	27.00 to 28.00
Cast iron borings	27.00 to 28.00
Shoveling turnings	29.50 to 30.50
Clean cast chem. borings	27.00 to 28.00
Low phos. 5 ft and under	47.00 to 48.00
Low phos. 2 ft and under	48.00 to 49.00
Low phos. punch'gs	48.00 to 49.00
Elec. furnace bundles	46.00 to 47.00
Heavy turnings	41.00 to 42.00
RR. steel wheels	47.00 to 48.00
RR. spring steel	47.00 to 48.00
Rails 18 in. and under	52.00 to 54.00
Cupola cast	36.00 to 38.00
Heavy breakable cast	44.00 to 45.00
Cast iron car wheels	47.00 to 48.00
Malleable	48.00 to 49.00
Unstripped motor blocks	28.00 to 30.00
No. 1 machinery cast	46.00 to 47.00

Cleveland

No. 1 hvy. melting	$43.50 to $44.50
No. 2 hvy. melting	38.00 to 39.00
No. 1 bundles	43.50 to 44.50
No. 2 bundles	35.00 to 36.00
No. 1 busheling	43.50 to 44.50
Machine shop turn.	25.00 to 26.00
Mixed bor. and turn.	27.00 to 28.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	27.00 to 28.00
Cut struct'r'l & plates, 2 ft & under	49.00 to 50.00
Drop forge flashings	43.00 to 44.00
Low phos. punch'gs, plate	44.00 to 45.00
Foundry steel, 2 ft & under	48.00 to 49.00
No. 1 RR. heavy melting	44.50 to 45.50
Rails 2 ft and under	53.00 to 54.00
Rails 18 in. and under	54.00 to 55.00
Railroad grate bars	36.00 to 37.00
Steel axle turnings	29.00 to 30.00
Railroad cast	48.00 to 49.00
No. 1 machinery cast	48.00 to 49.00
Stove plate	44.00 to 45.00
Malleable	48.00 to 49.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	$46.00 to $47.00
No. 2 hvy. melting	41.00 to 42.00
No. 1 bundles	46.00 to 47.00
No. 2 bundles	39.00 to 40.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	29.00 to 30.00
Low phos. plate	46.00 to 47.00

Buffalo

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 busheling	39.00 to 40.00
No. 1 bundles	39.00 to 40.00
No. 2 bundles	31.00 to 32.00
Machine shop turn.	26.00 to 27.00
Mixed bor. and turn.	28.00 to 29.00
Shoveling turnings	29.00 to 30.00
Cast iron borings	28.00 to 29.00
Low phos. plate	44.00 to 45.00
Scrap rails, random lgth.	45.00 to 46.00
Rails 2 ft and under	49.00 to 50.00
RR. steel wheels	48.00 to 49.00
RR. spring steel	48.00 to 49.00
RR. couplers and knuckles	48.00 to 49.00
No. 1 machinery cast	43.00 to 44.00
No. 1 cupola cast	40.00 to 41.00

Detroit

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 bundles, openhearth	38.00 to 39.00
No. 2 bundles	25.00 to 26.00
New busheling	38.00 to 39.00
Drop forge flashings	37.50 to 38.50
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Low phos. punch'gs, plate	38.00 to 39.00
No. 1 cupola cast	39.00 to 40.00
Heavy breakable cast	32.00 to 33.00
Stove plate	34.00 to 35.00
Automotive cast	42.00 to 43.00

St. Louis

No. 1 hvy. melting	$36.50 to $37.50
No. 2 hvy. melting	34.00 to 35.00
No. 1 bundles	36.50 to 37.50
No. 2 bundles	29.50 to 30.50
Machine shop turn.	23.00 to 24.00
Cast iron borings	27.00 to 28.00
Shoveling turnings	27.00 to 28.00
No. 1 RR. hvy. melting	41.00 to 42.00
Rails, random lengths	46.00 to 47.00
Rails, 18 in. and under	50.00 to 51.00
Locomotive tires uncut	41.00 to 42.00
Angles and splice bars	43.00 to 44.00
Std. steel car axles	45.00 to 46.00
RR. specialties	45.00 to 46.00
Cupola cast	45.00 to 46.00
Heavy breakable cast	39.00 to 40.00
Cast iron brake shoes	37.00 to 38.00
Stove plate	38.00 to 39.00
Cast iron car wheels	42.00 to 43.00
Malleable	42.50 to 43.50
Unstripped motor blocks	38.50 to 39.50

Boston

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 bundles	34.00 to 35.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	34.00 to 35.00
Elec. furnace, 3 ft & under	35.00 to 36.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and short turn.	15.50 to 16.00
Shoveling turnings	18.50 to 19.50
Clean cast chem. borings	17.00 to 18.00
No. 1 machinery cast	31.00 to 32.00
Mixed cupola cast	29.00 to 30.00
Heavy breakable cast	31.00 to 32.00
Stove plate	28.00 to 29.00
Unstripped motor blocks	17.00 to 18.00

New York

Brokers buying prices per gross ton, on cars:

No. 1 hvy. melting	$39.00
No. 2 hvy. melting	$34.00 to 35.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	18.00 to 19.00
Mixed bor. and turn.	20.00 to 21.00
Shoveling turnings	21.00 to 22.00
Clean cast chem. borings	21.00 to 22.00
No. 1 machinery cast	37.00 to 38.00
Mixed yard cast	32.00 to 33.00
Charging box cast	36.00 to 37.00
Heavy breakable cast	36.00 to 37.00
Unstripped motor blocks	24.00 to 25.00

Birmingham

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 bundles	32.00 to 33.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	32.00 to 33.00
Machine shop turn.	19.00 to 20.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	15.00 to 16.00
Electric furnace bundles	34.00 to 35.00
Bar crops and plate	39.00 to 40.00
Structural and plate, 2 ft	38.00 to 39.00
No. 1 RR. hvy. melting	38.00 to 39.00
Scrap rails, random lgth.	44.00 to 45.00
Rails, 18 in. and under	48.00 to 49.00
Angles & splice bars	44.00 to 45.00
Rerolling rails	51.00 to 52.00
No. 1 cupola cast	46.00 to 47.00
Stove plate	43.00 to 44.00
Charging box cast	23.00 to 24.00
Cast iron car wheels	34.00 to 35.00
Unstripped motor blocks	35.00 to 36.00
Mashed tin cans	15.00 to 16.00

Cincinnati

Brokers buying prices per gross ton, on carr

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 bundles	39.00 to 40.00
No. 2 bundles	33.00 to 35.00
Machine shop turn.	27.00 to 28.00
Mixed bor. and turn.	24.00 to 25.00
Shoveling turnings	32.00 to 33.00
Cast iron borings	24.00 to 25.00
Low phos., 18 in. & under	43.00 to 44.00
Rails, random lengths	44.00 to 45.00
Rails, 18 in. and under	51.00 to 52.00
No. 1 cupola cast	44.00 to 45.00
Hvy. breakable cast	38.00 to 39.00
Drop broken cast	49.00 to 50.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 bundles	32.00
No. 2 bundles	27.00
No. 3 bundles	23.00
Machine shop turn.	12.00
Cast iron borings	11.00
No. 1 RR. hvy. melting	32.00
No. 1 cupola cast	45.00

Los Angeles

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 bundles	32.00
No. 2 bundles	25.00
No. 3 bundles	22.00
Machine shop turn.	10.00
Shoveling turnings	12.00
Cast iron borings	12.00
Elec. furn. 1 ft. and under	32.00
No. 1 RR. hvy. melting	32.00
No. 1 cupola cast	42.00

Seattle

No. 1 hvy. melting	$33.00
No. 2 hvy. melting	29.00
No. 2 bundles	23.00
No. 3 bundles	19.00
No. 1 cupola cast	35.00
Mixed yard cast	35.00

Hamilton, Ont.

No. 1 hvy. melting	$38.50
No. 2 hvy. melting	35.50
No. 1 bundles	38.50
No. 2 bundles	32.50
Mixed steel scrap	32.50
Bushelings	33.50
Bush., new fact prep'd	36.50
Bush., new fact unprep'd	32.50
Machine shop turn.	16.00
Short steel turnings	25.50
Mixed bor. and turn.	$16.00 to 17.00
Rails, rerolling	47.50
Cast scrap	42.00 to 45.00

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Copper Price Headed Up

Situation unsettled . . . All indications are that American product must follow world price up . . . Expansion keynote in aluminum.

◆ COPPER . . . The market has resolved itself into a rather large jig saw puzzle with new pieces being added every day. But the incomplete picture is beginning to look like a definite price boost. One saving feature is that it may not be as much as is generally being predicted—at least not right away.

The price of electrolytic copper is going up all over the world. French and Turkish copper increased in price during the week. Belgian copper is up less than 1¢ per lb to 38.35 f.a.s New York. Chilean copper is also headed up.

American subsidiaries of Anaconda and Kennecott mine Chilean ore under a government concession in return for royalties. However a Chilean government board has a hand in setting the price. At this time the mine operators and the board are conferring on an increase. Unofficial sources indicate a potential boost from the current 36¢ per lb to a possible 40¢. An Anaconda spokesman declared that the parent companies in effect have no say on the price of Chile copper.

In the face of this world rising market there actually can be little doubt as to the eventual increase in the price of the American product.

In addition, two of the major four American producers, Anaconda and Phelps Dodge, have settled their labor problems with a round of wage increases. The other two, Kennecott and American Smelting & Refining, are still struck, but eventual settlement will be on the basis of a wage boost.

Brass mills have increased prices of mill products—Revere, Federated and Scovill among others.

However, there are two big factors which will temper the judgment of the copper companies in establishing the extent of the price increase.

Some copper company executives remember post-World War I when copper priced itself out of the market.

Uncle Sam has taken a hand in copper to insure no slackening of the defense production program.

MR. REYNOLDS

ALUMINUM . . . Richard Samuel Reynolds, founder and chairman of Reynolds Metal Co., is dead, victim of a heart attack suffered at his home in Richmond, Va. He was 73 years of age.

Mr. Reynolds is survived by his wife and four sons, one of which is Richard S. Reynolds, Jr., president of Reynolds Metals.

The late Mr. Reynolds' first business venture was in 1903 when he left college to join his uncle in the tobacco business. In 1912 his uncle R. J. Reynolds, and British-American Tobacco Co. formed the United States Foil Co. interested in cigarette packaging. Later both withdrew and R. S. Reynolds bought part of the stock with the rest being disposed of on the market. In 1926 the switch was made to aluminum foil and in 1928 the Reynolds Metals Co. was formed with U. S. Foil as the controlling stockholder.

Reynolds began producing aluminum in 1940. At the time of his death his organization was the second largest in the United States.

Richard S. Reynolds Jr., now head executive at Reynolds announced plans to boost the company's primary aluminum producing capacity to 1.1 billion lbs. This initial move involved sale by the company of $155 million 25 year first mortgage bonds and an $80 million unsecured five year bank loan. This was used to refund all of the company's mortgage and loan indebtedness making Reynolds now completely privately financed and reducing the 1955-60 debt repayments by $68 million. Lower debt payments will enable Reynolds to push ahead a $230 million expansion program. About $200 million is earmarked for the 270 million lb. expansion of primary producing and related facilities. $22.5 million will add 50 million lb to the capacity of Reynolds' Listerhill, Ala. plant and 20 million lb to its Texas plant.

ALCOA joined the expansion movement in the industry by proposing to build a $35 million alumina plant adjacent to its Point Comfort Smelter in Texas if the U. S. Corp of Engineers would construct a 30 ft navigation channel in Matagorda Bay. ALCOA's offer to pay service and dockage fees has enlisted the aid of Calhoun County Navigation District in pressing for the channel. Economics of the situation are such that should the channel be built ALCOA will go ahead with its plans with production scheduled to begin in early 1958.

NICKEL . . .The Office of Defense Mobilization, in order to relieve the pressure caused by increasing production demands, has ordered the release of an additional million lb of nickel for private industry. This makes a total of 2 million lb diverted from deferred deliveries to the stockpile in recent months. The recommendation for the move came from the Commerce Dept. Business Defense and Services Administration.

Daily Nonferrous Metal Prices

(Cents per lb except as noted)

	Aug. 3	Aug. 4	Aug. 5	Aug. 6	Aug. 8	Aug. 9
Copper, electro, Conn.	36.00	36.00	36.00	.....	36.00	36.00
Copper, Lake, delivered	36.00	36.00	36.00	.....	36.00	36.00
Tin, Straits, New York	97.50	97.375	97.375	97.25	97.00	97.00*
Zinc, East St. Louis	12.50	12.50	12.50	12.50	12.50	12.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Note: Quotations are going prices **Tentative*

COPPER DETERMINATION

Alloymet 2030 (65% Nickel 30% Copper 5% Iron)*

A product of close Metallurgical CONTROL for the production of low alloy steel and gray iron

Pre-alloyed master alloys are leaving an indelible mark on the iron and steel industry. The element of human error is reduced many fold, since a single alloying agent, ALLOYMET 2030 ingot or shot, can replace many separate inoculants. A single trial of Alloymet 2030 or its companion alloys will make you an "Alloymet regular."

For further information, write us for our booklet, "Master Alloys."

*Nominal Chemical Composition

ALTER COMPANY
Alloy Metal Division
1701 Rockingham Road, DAVENPORT, IOWA
Phone 6-2561 Teletype DV 588

Nonferrous Prices *(Effective Aug. 9, 1955)*

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 20,000 lb, f.o.b. ship. pt., frt. allowed)

Alloy	Flat Sheet			Plate
	0.032 in.	0.081 in.	0.136-0.249 in.	0.250-3.000 in.
1100, 3003	40.8	38.7	37.5	36.5
3004	45.7	41.4	39.7	39.1
5052	48.3	43.4	41.7	39.9
2024-O, -OAL	51.2	42.5	41.0	41.2
7075-O, -OAL	62.6	50.8	48.5	48.6

Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FS1-O ¼ in., 59¢; 3/16 in., 60¢; ½ in., 59¢; 0.064 in., 76¢; 0.032 in., 97¢. Specification grade higher. Base, 30,000 lb.

Extruded Round Rod: M, diam ¼ to 0.311 in., 79¢; ½ to ¾ in., 62.5¢; 1¼ to 1.749 in., 59¢; 2½ to 5 in., 54.5¢. Other alloys higher. Base up to ¾ in. diam, 10,000 lb; ⅞ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 67.5¢; 0.22 to 0.25 lb, 5.9 in., 64.3¢; 0.50 to 0.59 lb, 8.6 in., 61.7¢; 1.3 to 2.59 lb, 19.5 in., 59.8¢; 4 to 6 lb, 28 in., 55¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD ¼ to 5/16 in., $1.46; 5/16 to ⅝ in., $1.32; ½ to ⅝ in., 99¢; 1 to 2 in., 82¢; 0.165 to 0.219 in. wall: OD, ⅝ to ¾ in., 67¢; 1 to 2 in., 63¢; 3 to 4 in., 62¢. Other alloys higher. Base OD: Up to 1½ in., 10,000 lb; 1½ to 3 in., 20,000 lb; over 3 in., 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Sheet and strip, commercially pure, $14.00-$14.50; alloy $16.50; Plate, HR, commercially pure, $11.50-$12.00; alloy, $12.50-$12.75; Wire, rolled and/or drawn, commercially pure, $10.50-$11.00; alloy, $12.50; Bar, HR or forged, commercially pure, $8.50-$8.75; alloy, $8.50-$9.00.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	102	78	99
Strip, CR	102	87	125
Rod, Bar, HR	87	69	93
Angles, HR	87	69	93
Plate, HR	97	82	95
Seamless Tube	122	108	153
Shot, Blocks		85	

Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	56.79		58.86
Copper, h-r	58.76	55.11	
Copper, drawn		56.36	
Low brass	53.15	53.09	
Yellow brass	49.27	49.21	
Red brass	54.54	54.48	
Naval brass	52.83	47.14	48.40
Leaded brass			45.74
Com. bronze	56.48	56.42	
Mang. bronze	56.57	50.67	52.22
Phos. bronze	77.14	77.64	
Muntz metal	50.94	46.75	48.00
Ni silver, 10 pct	63.05	66.13	68.50

Beryllium copper, CR, 1.9% Be, Base 2000 lb, f.o.b.

Strip	$1.78
Rod, bar, wire	1.75

PRIMARY METAL

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	24.40
Aluminum pig	22.50
Antimony, American, Laredo, Tex.	28.50
Beryllium copper, per lb conta'd Be	$40.00
Beryllium aluminum 5% Be, Dollars per lb contained Be	$72.75
Bismuth, ton lots	$2.25
Cadmium, del'd	$1.70
Cobalt, 97-99% (per lb)	$2.60 to $2.67
Copper, electro, Conn. Valley	36.00
Copper, Lake, delivered	36.00
Gold, U. S. Treas., per troy oz.	$35.00
Indium, 99.9%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$90 to $100
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig	28.50
ingot	29.25
Magnesium, sticks, 100 to 500 lb	49.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$255 to $257
Nickel electro, f.o.b. N. Y. warehouse	67.67
Nickel oxide sinter, at Copper Cliff, Ont., contained nickel	60.75
Palladium, dollars per troy oz.	$22 to $24
Platinum, dollars per troy oz.	$80 to $87
Silver, New York, cents per troy oz.	90.75
Tin, New York	97.00
Titanium, sponge, grade A-1	$3.95
Zinc, East St. Louis	12.50
Zinc, New York	13.00
Zirconium, sponge	$10.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5-5 ingot	
No. 115	39.75
No. 120	39.25
No. 123	38.75
80-10-10 ingot	
No. 305	43.00
No. 315	41.25
88-10-2 ingot	
No. 210	55.25
No. 215	51.25
No. 245	45.75
Yellow ingot	
No. 405	32.75
Manganese bronze	
No. 421	36.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper max.	31.25-32.50
0.60 copper max.	31.00-32.25
Piston alloys (No. 122 type)	31.00-32.25
No. 12 alum. (No. 2 grade)	29.50-30.75
108 alloy	29.50-30.50
195 alloy	30.75-32.25
13 alloy (0.60 copper max.)	31.00-32.25
AXS-679	29.50-30.50

Steel deoxidizing aluminum, notch bar granulated or shot

Grade 1—95-97½%	29.00-30.50
Grade 2—92-95%	28.50-29.50
Grade 3—90-92%	27.50-28.50
Grade 4—85-90%	27.00-27.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	44.92
Electrodeposited	39.78
Flat rolled	45.42
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	90.50*
Cadmium	$1.70
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.	94½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63.00
Copper sulphate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	31.25*
Nickel chloride, 300 to 400 lb.	43.50*
Silver cyanide, 100 oz. lots, per oz.	75½
Sodium cyanide, 96 pct domestic 200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

* Effective Jan. 3.

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	38	37½
Yellow brass	28½	26
Red brass	33⅜	32⅜
Comm. bronze	34⅜	34
Mang. bronze	26¼	25⅜
Yellow brass rod ends	27¼	

Custom Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	39½
No. 2 copper wire	38
Light copper	36
*Refinery brass	35

* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	39
No. 2 copper wire	37½
Light copper	36
No. 1 composition	32½
No. 1 comp. turnings	32
Rolled brass	25
Brass pipe	25½
Radiators	25½
Aluminum	
Mixed old cast	19 —20
Mixed new clips	19½—21
Mixed turnings, dry	19 —20½

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	35½—36
No. 2 heavy copper and wire	34½—35
Light copper	32½—33
New type shell cuttings	32½—33
Auto radiators (unsweated)	22½—23
No. 1 composition	28½—29½
No. 1 composition turnings	27½—28
Unlined red car boxes	23
Cocks and faucets	23½—24
Mixed heavy yellow brass	19½—20
Old rolled brass	22 —22½
Brass pipe	24 —24½
New soft brass clippings	23½—24
No. 1 brass rod turnings	22 —22½

Aluminum

Alum. pistons and struts	15½—16
Aluminum crankcases	15½—16
1100 (2S) aluminum clippings	18½—19
Old sheet and utensils	16½—17
Borings and turnings	11 —11½
Misc. cast aluminum	16½—17
2024 (24s) clippings	17½—18

Zinc

New zinc clippings	7½— 8
Old zinc	5 — 5½
Zinc routings	3½
Old die cast scrap	3½

Nickel and Monel

Pure nickel clippings	85 —90
Clean nickel turnings	65 —70
Nickel anodes	80
Nickel rod ends	80
New Monel clippings	38½—42
Clean Monel turnings	29½
Old sheet Monel	34½
Nickel silver clippings, mixed	19
Nickel silver turnings, mixed	15½

Lead

Soft scrap lead	11½—12
Battery plates (dry)	6½— 6¾
Batteries, acid free	4¼

Magnesium

Segregated solids	18½—19
Castings	17½—18

Miscellaneous

Block tin	77
No. 1 pewter	63 —64
Auto babbitt	42 —43
Mixed common babbitt	14½
Solder joints	19½—20
Siphon tops	43
Small foundry type	16½
Monotype	15
Lino. and stereotype	14 —14¼
Electrotype	12 —12⅜
Hand picked type shells	10¾
Lino. and stereo. dross	6
Electro dross	5

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(Effective Aug. 9, 1955)

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		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$96.00 *B3*		4.65 *B3*	6.80 *B3*	4.65 *B3*						
	Buffalo, N. Y.	$68.50 *B3*	$84.50 *R3, B3*	$96.00 *R3, B3*	5.45 *B3*	4.65 *B3*	6.80 *B3*	4.65 *B3*	4.325 *R3,B3*	6.25 *B3* 6.25 *R7, S10*	6.425 *B3*	9.125 *B3*		
	Claymont, Del.													
	Harrison, N. J.													13.45 *C11*
	Conshohocken, Pa.								4.375 *A2*	6.30 *A2*	6.425 *A2*			
	New Bedford, Mass.									6.70 *R6*				
	Johnstown, Pa.	$68.50 *B3*	$84.50 *B3*	$96.00 *B3*		4.65 *B3*	6.80 *B3*							
	Boston, Mass.									6.80 *T8*				13.80 *T8*
	New Haven, Conn.									6.70 *D1* 7.00 *A3*				
	Phoenixville, Pa.					5.15 *P2*		5.15 *P2*						
	Sparrows Pt., Md.								4.325 *B3*	6.25 *B3*	6.425 *B3*	9.125 *B3*		
	Bridgeport, Wallingford, Conn.	$73.50 *N8*	$89.50 *N8*						4.625 *N8*	6.70 *W1*			7.50 *N8*	
	Pawtucket, R. I. Worcester, Mass.									6.80 *N7* 7.10 *A5*				*A5* 13.80 *N7*
MIDDLE WEST	Alton, Ill.								4.50 *L1*					
	Ashland, Ky.								4.325 *A7*					
	Canton-Massillon, Dover, Ohio		$86.50 *R3*	$96.00 *R3*										13.45 *G4*
	Chicago, Ill.	$68.50 *U1*	$84.50 *R3, U1,W8*	$96.00 *R3, U1,W8*	5.45 *U1*	4.60 *U1, W8*	6.75 *U1, Y1*	4.60 *U1*	4.325 *A1, N4,W8*	6.35 *A1,T8*			7.20 *W8*	13.45 *T8*
	Cleveland, Ohio									6.25 *A5,J3*		9.30 *A5*		13.45 *A5*
	Detroit, Mich.			$96.00 *R5*					4.425 *G3,M2*	6.35 *D1,D2, G3,M2,P11*	6.525 *G3*	9.20 *D2, G3*		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	$68.50 *U1*	$84.50 *U1*	$96.00 *U1, Y1*	5.45 *I3*	4.60 *U1, I3*	6.75 *U1, I3*		4.325 *I3, U1,Y1*	6.35 *I3* 6.25 *Y1*	6.425 *I3, U1,Y1*	9.30 *Y1*	7.20 *Y1, U1*	
	Sterling, Ill.								4.425 *N4*					
	Indianapolis, Ind.									6.40 *C5*				
	Newport, Ky.												7.20 *N5*	
	Middletown, Ohio									6.45 *A7*				
	Niles, Warren, Ohio Sharon, Pa.	$68.50 *C10*	$84.50 *C10*	$96.00 *C10*					4.325 *S1, R3*	6.25 *S1, R3,T4*	6.425 *S1, R3*	9.10 *S1, R3*	7.20 *S1*	13.45 *S1*
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	$68.50 *U1, J3*	$84.50 *J3, U1,C11*	$96.00 *U1, C11*	5.45 *U1*	4.60 *U1, J3*	6.75 *U1, J3*	4.60 *U1*	4.325 *P6*	6.25 *S7,B4*			7.20 *S9*	13.45 *S9*
	Portsmouth, Ohio								4.325 *P7*	6.25 *P7*				
	Weirton, Wheeling, Follansbee, W. Va.					4.60 *W3*			4.325 *W3*	6.25 *F3,W3*	6.425 *W3*	9.10 *W3*		
	Youngstown, Ohio		$84.50 *C10*	$96.00 *Y1, C10*		4.60 *Y1*	6.75 *Y1*		4.325 *U1, Y1*	6.25 *Y1,C5*	6.425 *U1, Y1*	9.30 *Y1*	7.20 *U1, Y1*	13.45 *C5*
WEST	Fontana, Cal.	$76.00 *K1*	$92.00 *K1*	$115.00 *K1*		5.25 *K1*	7.40 *K1*	5.40 *K1*	5.075 *K1*	8.00 *K1*	7.525 *K1*		8.05 *K1*	
	Geneva, Utah		$84.50 *C7*			4.60 *C7*	6.75 *C7*							
	Kansas City, Mo.					4.70 *S2*	6.85 *S2*				6.675 *S2*		7.45 *S2*	
	Los Angeles, Torrance, Cal.		$94.00 *B2*	$116.00 *B2*		5.30 *C7, B2*	7.45 *B2*		5.075 *C7, B2*	8.30 *C1*			8.40 *B2*	
	Minnequa, Colo.					4.90 *C6*			5.425 *C6*					
	Portland, Ore.					5.35 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$94.00 *B2*			5.25 *B2 P9*	7.40 *B2*		5.075 *B2, C7*					
	Seattle, Wash.		$98.00 *B2*			5.35 *B2*	7.50 *B2*		5.325 *B2*					
SOUTH	Atlanta, Ga.								4.525 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$68.50 *T2*	$84.50 *T2*			4.60 *C16, R3,T2*	6.75 *T2*		4.325 *R3, C16,T2*		6.425 *T2*			
	Houston, Lone Star, Tex.	*L3*	$89.50 *S2*	$101.00 *S2*		4.70 *S2*	6.85 *S2*				6.875 *S2*		7.45 *S2*	

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		SHEETS										WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized *10* ga.	Enameling *12* ga.	Long Terne *10* ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled *19* ga.		Coke* *1.25*-lb. base box	Electro* *0.25*-lb. base box	Hollowware Enameling *29* ga.
EAST	Bethlehem, Pa.													
	Buffalo, N. Y.	4.325 *B3*	5.325 *B3*				6.375 *B3*	7.875 *B3*				*W6*	† Special coated mfg. terne deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 125 lb. deduct $2.20 from 1.25-lb. coke base box. * COKES: 1.50-lb. add 25¢. ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.10. Differential 1.00 lb./0.25 lb. add 85¢.		
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.	4.375 *A2*	5.375 *A2*				6.425 *A2*							
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.											5.025 *B3*		
	Fairless, Pa.	4.375 *U1*	5.375 *U1*				6.425 *U1*	7.925 *U1*					$8.90 *U1*	$7.60 *U1*	
	New Haven, Conn.														
	Phoenixville, Pa.														
	Sparrows Pt., Md.	4.325 *B3*	5.325 *B3*	5.85 *B3*			6.375 *B3*	7.875 *B3*	8.80 *B3*			5.125 *B3*	$8.90 *B3*	$7.60 *B3*	
	Worcester, Mass.											5.325 *A5*			
	Trenton, N. J.														
MIDDLE WEST	Alton, Ill.											5.20 *L1*			
	Ashland, Ky.	4.325 *A7*		5.85 *A7*	5.90 *A7*										
	Canton-Massillon, Dover, Ohio			5.85 *R1, R3*											
	Chicago, Joliet, Ill.	4.325 *A1, W8*					6.375 *U1*					5.025 *A5, N4, R3*			
	Sterling, Ill.											5.125 *N4*			
	Cleveland, Ohio	4.325 *J3, R3*	5.325 *J3, R3*		5.90 *R3*		6.375 *J3, R3*	7.875 *J3, R3*				5.025 *A5*			
	Detroit, Mich.	4.425 *G3, M2*	5.425 *G3, M2*				6.475 *G3*	7.975 *G3*							
	Newport, Ky.	4.325 *N5*	5.325 *N5*	5.85 *N5*											
	Gary, Ind. Harbor, Indiana	4.325 *I3, U1, Y1*	5.325 *I3, U1, Y1*	5.85 *U1, I3*	5.90 *U1, I3*	6.25 *U1*	6.375 *Y1, U1, I3*	7.875 *U1, Y1*				5.025 *Y1*	$8.80 *I3, U1, Y1*	$7.50 *I3, U1, Y1*	6.65 *U1, Y1*
	Granite City, Ill.	4.525 *G2*	5.525 *G2*	6.05 *G2*	6.10 *G2*									$7.80 *G2*	6.75 *G2*
	Kokomo, Ind.	4.425 *C9*		5.95 *C9*							5.475 *C9*	5.125 *C9*			
	Mansfield, Ohio	4.325 *E2*	5.325 *E2*			6.25 *E2*					*E2*				
	Middletown, Ohio		5.325 *A7*	5.85 *A7*	5.90 *A7*	6.25 *A7*									
	Niles, Warren, Ohio Sharon, Pa	4.325 *S1, R3 N3*	5.325 *R3 N3*	5.85 *N3, R3*	5.90 *N3*	6.25 *N3*	6.375 *S1, R3*	7.875 *R3*					$8.90 *R3*	$7.50 *R3,*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa.	4.325 *J3, U1, P6*	5.325 *J3, U1, P6*	5.85 *U1*	5.90 *U1, A7*		6.375 *J3, U1*	7.875 *U1*	8.80 *U1*			5.025 *A5 P6*	$8.80 *J3, U1*	$7.50 *J3, U1*	6.65 *U1*
	Portsmouth, Ohio	4.325 *P7*	5.325 *P7*									5.025 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	4.325 *W3, W5*	5.325 *W3, W5, F3*	5.85 *W3, W5*		6.25 *W3, W5*	6.375 *W3*	7.875 *W3*					$8.80 *W3, W5*	$7.50 *W3, W5*	6.65 *F3, W5*
	Youngstown, Ohio	4.325 *U1, Y1*	5.325 *Y1*		5.90 *Y1*		6.375 *U1, Y1*	7.875 *Y1*							
WEST	Fontana, Cal.	5.075 *K1*	6.425 *K1*				7.125 *K1*	8.975 *K1*							
	Geneva, Utah	4.425 *C7*													
	Kansas City, Mo.											5.275 *S2*			
	Los Angeles, Torrance, Cal.											5.825 *B2*			
	Minnequa, Colo.											5.275 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.025 *C7*	6.275 *C7*	6.00 *C7*								5.675 *C7*	$9.55 *C7*	$8.25 *C7*	
	Seattle, Wash														
SOUTH	Atlanta, Ga.														
	Fairfield, Ala. Alabama City, Ala.	4.325 *R3, T2*	5.325 *T2*	5.85 *R3, T2*			6.375 *T2*				5.625 *R3*	5.025 *R3, T2*	$8.90 *T2*	$7.60 *T2*	
	Houston, Tex.											5.275 *S2*			

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		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				5.575 *B3*	7.425 *B3*	6.80 *B3*					
	Buffalo, N. Y.	4.65 *B3,R3*	4.65 *B3,R3*	5.95 *B5*	5.575 *B3,R3,*	7.425 *B3,B5*	6.80 *B3*	4.50 *B3,R3*				6.25 *W6*
	Claymont, Del.							4.50 *C4*		6.30 *C4*		
	Conshohocken, Pa.							4.50 *L4*		6.30 *L4*	6.725 *L4*	
	Coatesville, Pa.							4.50 *A2*	5.575 *A2*		6.725 *A2*	
	Harrisburg, Pa.							5.10 *C3*	5.575 *C3*			
	Hartford, Conn.			6.40 *R3*		7.725 *R3*						
	Johnstown, Pa.	4.65 *B3*	4.65 *B3*		5.575 *B3*		6.80 *B3*	4.50 *B3*		6.30 *B3*	6.725 *B3*	6.25 *B3*
	Fairless, Pa.	4.80 *U1*	4.80 *U1*		5.725 *U1*							
	Newark, N. J.			6.35 *W10*		7.80 *W10*						
	Camden, N. J.			6.35 *P10*								
	Bridgeport, Putnam, Conn.	4.80 *N8*		6.45 *W10*	5.725 *N8*			4.750 *N8*				
	Sparrows Pt., Md.		4.65 *B3*					4.50 *B3*		6.30 *B3*	6.725 *B3*	6.35 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			6.35 *W11* 6.45 *B5,C14*		7.725 *A5,B5*		4.50 *R3*				6.55 *A5, W6*
MIDDLE WEST	Alton, Ill.	4.85 *L1*										6.425 *L1*
	Ashland,Newport,Ky.							4.50 *A7,N5*		6.30 *N5*		
	Canton-Massillon, Mansfield, Ohio	4.75 *R3*		5.90 *R2,R3*	5.575 *R3,T5*	7.425 *R2,R3, T5*		4.50 *E2*				
	Chicago, Joliet, Ill.	4.65 *U1, N4,W8,R3, P13*	4.65 *N4,R3, P13*	5.90 *A5,W10, W8,B5,L2*	5.575 *U1,R3, W8*	7.425 *A5,W8, W10,L2,B5*		4.50 *U1,W8, 13,A1,R3*	5.575 *U1*	6.30 *U1*	6.725 *U1*	6.25 *A5, R3,N4,W7*
	Cleveland, Ohio	4.65 *R3*	4.65 *R3*	5.90 *A5,C13*		7.425 *A5,C13*	6.80 *R3*	4.60 *J3, R3*	5.575 *J3*		6.725 *R3, J3*	6.25 *A5, C13*
	Detroit, Mich.	4.75 *G3*	4.75 *G3*	5.90 *R5* 6.10 *B5,P8* 6.15 *P3*	5.575 *R5* 5.675 *G3*	7.425 *R5* 7.625 *B5,P3 P8*	6.90 *G3*	4.60 *G3*			6.825 *G3*	
	Duluth, Minn.											6.25 *A5*
	Gary, Ind. Harbor, Crawfordsville	4.65 *I3, U1, Y1*	4.65 *I3, U1, Y1*	5.90 *M5,R3*	5.575 *I3, U1, Y1*	7.425 *M5, R3*	6.80 *U1,I3, Y1*	4.50 *I3, U1,Y1*	5.575 *I3*	6.30 *U1,Y1*	6.725 *U1,I3, Y1*	6.35 *M4*
	Granite City, Ill.							4.70 *G2*				
	Kokomo, Ind.											6.35 *C9*
	Sterling, Ill.	4.75 *N4*	4.75 *N4*									6.35 *N4*
	Niles, Warren, Ohio Sharon, Pa.	4.65 *R3,C10*		5.90 *C10*	5.575 *C10*	7.425 *C10*	6.80 *R3*	4.50 *S1,R3*		6.30 *S1*	6.725 *S1*	
	Pittsburgh, Pa. Midland, Pa.	4.65 *J3, U1, C11*	4.65 *J3, U1*	5.90 *A5,C8, C11,J3, W10,B4,R3*	5.575 *U1,C11*	7.425 *A5,C11, W10,C8,R3*	6.80 *J3, U1*	4.50 *J3, U1*	5.575 *U1*	6.30 *U1*	6.725 *J3, U1*	6.25 *A5,J3, P6*
	Portsmouth, Ohio											6.25 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	4.65 *W3*						4.50 *W3,W5*				
	Youngstown, Ohio	4.65 *U1,Y1, C10,R3*	4.65 *U1,Y1, R3*	5.90 *Y1, U1*	5.575 *U1,Y1, C10*	7.425 *Y1,C10* 7.865 *F2*	6.80 *U1,Y1*	4.50 *U1,Y1, R3*		6.30 *Y1*	6.725 *Y1*	6.25 *Y1*
WEST	Emeryville, Cal.	5.40 *J5*	5.40 *J5*									
	Fontana, Cal.	5.35 *K1*	5.35 *K1*		6.825 *K1*		7.50 *K1*	5.825 *K1*		6.95 *K1*	7.375 *K1*	
	Geneva, Utah						[6]	4.50 *C7*			6.725 *C7*	
	Kansas City, Mo.	4.90 *S2*	4.90 *S2*		5.825 *S2*		7.05 *S2*					6.50 *S2*
	Los Angeles, Torrance, Cal.	5.35 *B2,C7*	5.35 *B2,C7*	7.35 *R3*	6.625 *B2*		7.50 *B2*				7.625 *B2*	7.20 *B2*
	Minnequa, Colo.	5.10 *C6*	5.10 *C6*					5.35 *C6*				6.50 *C6*
	Portland, Ore.	5.40 *O2*	5.40 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	5.35 *C7* 5.40 *B2,P9*	5.35 *C7* 5.40 *B2,P9*				7.55 *B2*					7.20 *C7*
	Seattle, Wash.	5.40 *B2,P12, N6*	5.40 *B2,P12*				7.55 *B2*	5.40 *B2*		7.20 *B2*	7.625 *B2*	
SOUTH	Atlanta, Ga.	4.85 *A8*	4.85 *A8*									6.45 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	4.65 *T2,C16, R3*	4.65 *T2,C16, R3*				6.80 *T2*	4.50 *T2,R3*			6.725 *T2*	6.25 *R3, T2*
	Houston, Ft. Worth, Lone Star, Tex.	4.90 *S2*	4.90 *S2*		5.825 *S2*		7.05 *S2*	4.60 *L3, S2*		6.40 *S2*	6.825 *S2*	6.50 *S2*

Steel Prices *(Effective Aug. 9, 1955)*

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Products Dept., Claymont, Del.
C5 Cold Metal Products Co., Youngstown, O.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C17 Chester Blast Furnace Inc., Chester, Pa.

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.
D5 Henry Disston & Sons, Inc., Philadelphia

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Globe Iron Co., Jackson, O.
G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp, Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Div., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N5 Newport Steel Corp., Newport, Ky.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Northeastern Steel Corp., Bridgeport, Conn.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P12 Pacific Steel Rolling Mills, Seattle
P13 Phoenix Mfg. Co., Joliet, Ill.

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wycoff Steel Co., Pittsburgh
W11 Worcester Pressed Steel Co., Worcester, Mass.

Y1 Youngstown Sheet & Tube Co., Youngstown

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	15.50	0.25	18.50	4.25	21.00	7.75	23.50	8.50	24.00	9.50	24.50	10.00	26.00	9.75								
Youngstown *R3*	17.50	0.25	20.50	4.25	23.00	7.75	25.50	9.00	26.00	10.00	26.50	10.50	28.00	10.75								
Fontana *K1*	6.00	+9.25	9.00	+5.25	11.50	+1.75	14.00	+1.00	14.50	+0.00	15.00	0.50	16.50	0.25								
Pittsburgh *J3*	17.50	2.25	20.50	6.25	23.00	9.75	25.50	10.50	26.00	11.50	26.50	12.00	28.00	11.75	6.50	+8.50	10.50	+6.25	13.00	+3.75	14.50	+2.25
Alton, Ill. *L1*	15.50	0.25	18.50	4.25	21.00	7.75	23.50	8.50	24.00	9.50	24.50	10.00	26.00	9.75								
Sharon *M1*	17.50	2.25	20.50	6.25	23.00	9.75	25.50	10.50	26.00	11.50	26.50	12.00	28.00	11.75								
Fairless *N2*	15.50	0.25	18.50	4.25	21.00	7.75	23.50	8.50	24.00	9.50	24.50	10.00	26.00	9.75								
Pittsburgh *N1*	17.50	2.25	20.50	6.25	23.00	9.75	25.50	10.50	26.00	11.50	26.50	12.00	28.00	11.75	6.50	+8.50	10.50	+6.25	13.00	+3.75	14.50	+2.25
Wheeling *W5*	17.50	2.25	20.50	6.25	23.00	9.75	25.50	10.50	26.00	11.50	26.50	12.00	28.00	11.75								
Wheatland *W4*	17.50	2.25	20.50	6.25	23.00	9.75	25.50	10.50	26.00	11.50	26.50	12.00	28.00	11.75								
Youngstown *Y1*	17.50	2.25	20.50	6.25	23.00	9.75	25.50	10.50	26.00	11.50	26.50	12.00	28.00	11.75	6.50	+8.50	10.50	+6.25	13.00	+3.75	14.50	+2.25
Indiana Harbor *Y1*	16.50	1.25	19.50	5.25	22.00	8.75	24.50	+9.50	25.00	10.50	25.50	11.00	27.00	10.75								
Lorain *N2*	17.50	2.25	20.50	6.25	23.00	9.75	25.50	10.50	26.00	11.50	26.50	12.00	28.00	11.75	6.50	+8.50	10.50	+6.25	13.00	+3.75	14.50	+2.25
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	20.0	6.25	24.00	10.25	26.00	13.75	28.50	12.50	27.00	13.50	27.50	14.00	28.00	12.75								
Youngstown *R3*	22.0	6.25	26.00	10.25	28.00	13.75	28.50	13.00	29.00	14.00	29.50	14.50	30.00	13.75								
Fairless *N2*	20.0	6.25	24.00	10.25	26.00	13.75	26.50	12.50	27.00	13.50	27.50	14.00	25.00	12.75								
Fontana *K1*	10.50		14.50		16.50		17.00		17.50		18.00		18.50									
Pittsburgh *J3*	22.00	6.25	26.00	12.25	28.00	15.75	28.50	14.50	29.00	15.50	29.50	16.00	30.00	14.75	8.00	+6.00	13.00	+2.75	15.50	+0.25	20.50	4.75
Alton, Ill. *L1*	20.0	6.25	24.00	10.25	26.00	13.75	26.50	12.50	27.00	13.50	27.50	14.00	25.00	12.75								
Sharon *M1*	22.0	6.25	26.00	12.25	28.00	15.75	28.50	14.50	29.00	15.50	29.50	16.00	30.00	14.75								
Pittsburgh *N1*	22.0	6.25	26.00	12.25	28.00	15.75	28.50	14.50	29.00	15.50	29.50	16.00	30.00	14.75	8.00	+6.00	13.00	+2.75	15.50	+0.25	20.50	4.75
Wheeling *W5*	22.0	6.25	26.00	12.25	28.00	15.75	28.50	14.50	29.00	15.50	29.50	16.00	30.00	14.75								
Wheatland *W4*	22.0	6.25	26.00	12.25	28.00	15.75	28.50	14.50	29.00	15.50	29.50	16.00	30.00	14.75								
Youngstown *Y1*	22.0	6.25	26.00	12.25	28.00	15.75	28.50	14.50	29.00	15.50	29.50	16.00	30.00	14.75	8.00	+6.00	13.00	+2.75	15.50	+0.25	20.50	4.75
Indiana Harbor *Y1*	21.0	7.25	25.00	11.25	27.00	14.75	27.50	13.50	28.00	14.50	28.50	15.00	29.00	13.75								
Lorain *N2*	22.0	6.25	26.00	12.25	28.00	15.75	28.50	14.50	29.00	15.50	29.50	16.00	30.00	14.75	8.00	+6.00	13.00	+2.75	15.50	+0.25	20.50	4.75

Threads only, buttweld and seamless 2½ pt higher discount. Plain ends, buttweld and seamless, 3-in. and under, 4½ pt higher discount. Buttweld jobbers discount, 5 pct.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb, East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2 in., 1½ pt.; 2½ and 3-in., 1 pt. o.g., zinc price range of over 11¢ to 13¢ would lower discounts; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 12.50¢ per lb.

Steel Prices *(Effective Aug. 9, 1955)*

To identify producers, see Key on preceding page

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *U1*	4.725	5.65	5.825				
So. Chicago *R3*				7.90			
Ensley *T2*	4.725	5.65					
Fairfield *T2*		5.65		7.90		5.625	
Gary *U1*	4.725	5.65				5.625	
Ind. Harbor *I3*	4.725		5.825	7.90		5.625	
Johnstown *B3*		5.65					
Joliet *U1*		5.65	5.825				
Kansas City *S2*				7.90			
Lackawanna *B3*	4.725	5.65	5.825			5.625	
Minnequa *C6*	4.725	6.15	5.825	7.90		5.625	12.40
Pittsburgh *O1*							
Pittsburgh *P5*							
Pittsburgh *J3*				7.90			
Seattle *B2*				8.40		5.775	12.90
Steelton *B3*	4.725		5.825			5.625	
Struthers *Y1*				7.90			
Torrance *C7*						5.775	
Williamsport *S5*		5.65					
Youngstown *R3*				7.90			

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	8.40	8.60	
Armature	9.35	9.60	10.10
Elect.	9.95	10.20	10.70
Motor	10.95	11.20	11.70
Dynamo	11.85	12.10	12.60
Trans. 72	12.80	13.05	13.55
		Grain Oriented	
Trans. 65	13.35		
Trans. 58	13.85	Trans. 80	17.45
Trans. 52	14.85	Trans. 73	17.95

Producing points: Beech Bottom (*W5*); Brackenridge (*A5*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E7*); Newport, Ky. (*N5*); Niles, O. (*N3*); Vandergrift (*U1*); Warren, O. (*R5*); Zanesville (*A7*).

* Coils 75¢ higher

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence 9-15½ ga.	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City *R3*	152	162		173	175	7.40	7.80
Aliquippa, Pa. *J3*	152	162				7.40	7.80
Atlanta *A8*	154	167		175	180	7.50	8.025
Bartonville *K2**	154	168		175	181	7.50	8.075
Buffalo *W6*						7.40	7.80
Chicago, Ill. *N4**	152	166		173	179	7.40	7.975
Cleveland *A6*	157					7.40	
Cleveland *A5*						7.40	
Crawfordsville *M4**	154	167		175	175	7.50	8.05
Donora, Pa. *A5*	152	162		173	175	7.40	7.80
Duluth *A5*	152	162		173	175	7.40	7.80
Fairfield, Ala. *T2*	152	162		173	175	7.40	7.88
Galveston *D4*	157						
Houston *S2*	167	170			180	7.65	8.05
Johnstown, Pa. *B3**	152	166			175	7.40	7.80
Joliet, Ill. *A5*	152	162		173	175	7.40	7.80
Kokomo, Ind. *C9*	154	164		175	177	7.50	7.90
Los Angeles *B2**						8.35	8.925
Kansas City *S2*	167	174		178	180	7.65	8.05
Minnequa *C6*	157	167	162	178	180	7.65	8.05
Monessen *P6*	152	162				7.40	7.80
Moline, Ill. *R3*		162	162				
Pittsburgh, Cal. *C7*	171	185			195	8.35	8.75
Portsmouth *P7*						7.40	
Rankin, Pa. *A5*	152	162			175	7.40	7.80
So. Chicago *R3*	152	162	157	173	175	7.40	7.80
S. San Francisco *C6*				197	195	8.35	8.75
Sparrows Pt. *B3**	154			175	181	7.50	8.075
Struthers, O. *Y1*						7.40	7.90
Worcester *A5*	150					7.70	
Williamsport, Pa. *S5*			160				

* Galvanized products computed with zinc at 12.5¢ per lb. where indicated. Zinc at 5¢ per lb. for others.

WAREHOUSES

Base price, f.o.b., dollars per 100 lb.

Cities	City Delivery Charge	Sheets: Hot-Rolled	Sheets: Cold-Rolled	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Baltimore	$.10	7.03	8.32	8.95–9.10	7.45		7.21	7.93	7.61	8.62	14.38	13.44–13.96	16.36	16.29–16.49
Birmingham	.20	6.70	7.80	8.85	6.95			7.90	7.00	9.35				
Boston	.10	7.70	8.81	10.27	7.94–7.96	10.50	7.89	8.13	7.83	9.53	13.65–13.80	13.40–13.45	16.65	16.50
Buffalo	.30	6.80	7.90–8.05	9.70–9.77	7.15		7.15	7.40	7.10	7.90		13.10		16.15
Chicago	.25	6.80	7.93	8.50	7.06		6.99	7.28	7.06	7.75	13.20	12.85	16.05	15.90
Cincinnati	.25	6.92	7.92	8.90	7.30		7.28	7.75	7.32	8.05	13.44	13.09	16.29	16.14
Cleveland	.30	6.80	7.93	8.85	7.16		7.16	7.61	7.14	7.85		12.91		15.96
Denver		8.60	10.00	11.22	8.90		8.60	8.75	8.90	9.82				17.97
Detroit	.25	6.99	8.12	8.78	7.34	8.15	7.27	7.75	7.36	8.04	13.40	13.05	16.25	16.10
Houston		7.85	8.75	10.49	8.15		7.80	8.20	8.25	9.85–9.95		14.00		17.05
Kansas City	.20	7.47	8.60	9.17	7.73		7.66	7.95	7.75	8.52		13.52		
Los Angeles	.10	8.05	10.00	11.00	8.35		8.05	8.30	8.05	11.25		14.25		17.85
Memphis	.10	7.12	8.25		7.38		7.31	7.60	7.40	9.15				
Milwaukee	.25	6.89	8.02	8.59	7.15		7.08	7.45	7.17	7.94		12.94		15.99
New Orleans	.15	7.35	8.50		7.60		7.55	7.85	7.65	9.65				
New York	.10	7.46	8.68	9.44	8.07		7.76	7.99	7.96	9.48		13.28		16.33
Norfolk	.20	7.25			7.65		7.45	7.95	7.65	9.50				
Philadelphia	.10	7.14	8.42–9.02	9.35	7.67		7.37	7.74	7.64	8.46	13.51	13.16	16.36	16.21
Pittsburgh	.25	6.80	7.93	9.20	7.16	9.00	6.99	7.28	7.06	7.85	13.20	12.85	16.05	15.90
Portland	.10	7.80	8.80	10.65	8.00		7.75	7.85–8.15	7.95	11.80		15.00		17.50
Salt Lake City	.20		10.60		9.35			9.20	9.15					
San Francisco	.10	8.10	9.65	10.15	8.35		8.05	8.25	8.05	11.20*		14.25		17.85
Seattle	.00	8.55	10.40	10.80	8.65		8.20	8.30	8.35	11.70		14.60		17.65
St. Louis	.25	7.09	8.22	9.19	7.35	11.33	7.28	7.68	7.37	8.14	13.49	13.14	16.35	16.19–16.44
St. Paul	.25	7.46	8.59	9.16	7.72		7.65	7.94	7.74	8.51		13.51		16.56

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets for quantity.

Exceptions: (1) 1500 to 9999 lb. (2) 1000 lb or over. (3) $.25 delivery. (4) 1000 to 1999 lb, $.25 delivery.

* Plus analysis charge.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Buffalo, N. Y. *R7*	7.00	8.95	10.50	12.65	15.35
Carnegie, Pa. *S9*		8.95	10.50	12.65	15.35
Cleveland *A5*	7.00	8.95	10.50	12.65	15.35
Detroit *D1*	7.10	9.05	10.60	12.75	
Detroit *D2*	7.10	9.05	10.60		
Harrison, N. J. *C11*			10.80	12.95	15.65
Indianapolis *C5*			10.50	12.65	15.35
New Castle, Pa. *B4*	7.00	8.95	10.50	12.65	
New Haven, Conn. *D1*	7.45	9.25	10.80	12.95	
Pawtucket, R. I. *N7*	7.55	9.25	10.80	12.95	15.65
Pittsburgh *S7*	7.00	8.95	10.50	12.65	15.35
Riverdale, Ill. *A1*	7.10	8.95	10.50	12.65	15.35
Sharon, Pa. *S1*	7.00	8.95	10.50	12.65	15.35
Trenton *R4*					
Wallingford *W1*	7.45	9.25	10.80	12.95	15.65
Warren, Ohio *T4*	7.00	8.95	10.50	12.65	15.35
Weirton, W. Va. *W3*	7.10	8.95	10.50		
Worcester, Mass. *A5*	7.85	9.25	10.80	12.95	15.65
Youngstown *C5*	7.10	8.95	10.50	12.65	15.35

BOILER TUBES

$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	30.87	36.51	29.94	
	2½	12	41.57	49.16	40.31	
	3	12	47.99	56.76	46.54	
	3½	11	56.03	66.27	54.34	
	4	10	74.41	88.00	72.16	
National Tube	2	13	30.87	36.51	29.94	
	2½	12	42.57	49.16	40.31	
	3	12	47.99	56.76	46.54	
	3½	11	56.03	66.27	54.34	
	4	10	74.41	88.00	72.16	
Pittsburgh Steel	2	13	30.87	36.51		
	2½	12	41.57	49.16		
	3	12	47.99	56.76		
	3½	11	56.03	66.27		
	4	10	74.41	88.00		

Miscellaneous Prices

(Effective Aug. 9, 1955)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb
18	4	1	—	—	$1.60
18	4	1	—	5	2.305
18	4	2	—	8	1.765
1.5	4	1.5	8	—	.96
6	4	2	6	—	1.35
6	4	2	5	—	1.105

High-carbon chromium ..... .77
Oil hardened manganese ..... .42
Special carbon ..... .39
Extra carbon ..... .32
Regular carbon ..... .275

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb, f.o.b.

	Cladding	Plate (A3, J2, L4) 10 pct	Plate (A3, J2, L4) 15 pct	Plate (A3, J2, L4) 20 pct	Sheet (J2) 20 pct
Stainless Type	304	30.30	33.15	36.05	32.50
	316	35.50	38.45	41.40	47.80
	321	32.00	34.85	37.75	37.25
	347	34.40	37.90	41.40	45.25
	405	25.80	29.60	33.35	.....
	410, 430	25.30	29.10	32.85	.....

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective for 1955 season.

	Gross Ton
Openhearth lump	$11.25
Old range, bessemer	10.40
Old range, nonbessemer	10.25
Mesabi, bessemer	10.25
Mesabi, nonbessemer	10.10
High phosphorus	10.00

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$13.00 to $13.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $16.50
Foundry, oven coke	
Buffalo, del'd	$28.05
Chicago, f.o.b.	24.50
Detroit, f.o.b.	26.25
New England, del'd	26.90
Seaboard, N. J., f.o.b.	24.50
Philadelphia, f.o.b.	24.00
Swedeland, Pa., f.o.b.	24.00
Plainesville, Ohio, f.o.b.	25.50
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (in.)	Length (in.)	Price	CARBON* Diam. (in.)	Length (in.)	Price
24	84	22.00	48	110	10.80
20	72	21.25	40	100, 110	9.50
16 to 18	72	21.50	35	110	9.50
14	72	22.00	30	110	9.60
12	72	22.25	24	72 to 84	9.85
8 to 10	60	22.75	20	90	9.55
7	60	23.00	17	72	9.95
6	60	25.50	14	72	10.25
4	40	26.50	10, 12	60	11.10
3	40	30.00	8	60	11.40
2½	39	30.75			
2	24	47.75			

* Prices shown cover carbon nipples.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Machine and Carriage Bolts

	Discount Less Case	Discount C.
½ in. & smaller x 4 in. & shorter	+5	17
½ in. & smaller x 6 in. & shorter	+12	11
9/16 in. & ⅝ in. x 6 in. & shorter	+13	10
⅝ in. & larger x 6 in. & shorter	+16	7
All diam. longer than 6 in.	+25	net
Rolled thread carriage bolts ½ in. & smaller x 6 in. and shorter	+10	12
Lag, all diam. x 6 in. & shorter	+2	18
Lag, all diam. longer than 6 in.	+11	12
Plow bolts	18	18

Nuts, H.P., C.P., reg. & hvy.

	Base Discount	Discount, Case or Keg
¾" or smaller	55	64
⅞" to 1⅛" inclusive	55	63
1¼" to 1½" inclusive	57	65
1⅝" and larger	51	61

C.P. Hex. regular & hvy.

¾" and smaller	55	64
⅞" and larger	51	61

Hot Galv Nuts (all types)

¾" or smaller	28	50
⅞" to 1½" inclusive	36	49

Finished, Semi-finished, Slotted or Castellated Nuts

¾" and smaller	55	66
⅞" and larger	51	63

Rivets

	Base per 100 lb.
½ in. and larger	$9.95
	Pct Off List
7/16 in. and smaller	32

Cap Screws

	Discount Bright	Discount H.C. Heat Treated
New std. hex head, packaged ¼" thru ½" diam. x 6" and shorter	34	20
9/16 and ⅝" x 6" and smaller and shorter	31	16
¾", ⅞", 1" x 6" and shorter	8	+11
New std. hex head, bulk* ¼" thru ½" diam. x 6" and shorter	49	41
9/16" and ⅝" diam. x 6" and shorter	48	39
¾", ⅞", 1" x 6" and shorter	31	20

*Minimum quantity per item:
15,000 pieces ¼", 5/16", ⅜" diam.
5,000 pieces 7/16", ½", 9/16", ⅝" diam.
2,000 pieces ¾", ⅞", 1" diam.

Machine Screws & Stove Bolts

	Discount Mach. Screws	Discount Stove Bolts
Packaged, package list	27	38
Bulk, bulk list		
Quantity		
¼-in. diam. & under; 5/16-in. diam. & larger; All diam. over 3 in. long — 25,000-200,000	20	61
15,000-100,000	20	61
5,000-100,000	..	61

Machine Screw & Stove Bolt Nuts

	Discount Hex	Discount Square
Packaged, package list		
Bulk, bulk list		
Quantity		
⅜-in. diam. & smaller — 25,000-200,000	18	20

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa (except Salina, Pa., add $5.00)	$122.00
No. 1 Ohio	.....
Sec. quality, Pa., Md., Ky., Mo., Ill.	114.00
No. 2 Ohio	.....
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	18.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$128.00
Childs, Hays, Pa.	133.00
Chicago District	138.00
Western Utah	.....
California	.....
Super Duty Hays, Pa., Athens, Tex., Windham	145.00
Curtner, Calif.	163.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	21.00
Silica cement, net ton, bulk, Hays, Pa.	24.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	22.00
Silica cement, net ton, bulk, Utah and Calif.	.....

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$86.00
Standards chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Standard Baltimore	$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite

Bl. ⅝-in., grains

Domestic, f.o.b. Baltimore in bulk fines removed	$64.40
Domestic, f.o.b. Chewalah, Wash., Luning, Nev.	
in bulk	40.00
in sacks	46.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$15.00
Midwest	15.60
Missouri Valley	14.00

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	11.25¢
Canadian sponge iron, Del'd in East, carloads	9.5¢ / 10.75¢
Domestic sponge iron, 98+% Fe, carload lots	9.5¢
Electrolytic iron, annealed, imported 99.5+% Fe	27.5¢
domestic 99.5+% Fe	36.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	53.5¢
Hydrogen reduced iron minus 300 mesh, 98+% Fe.	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 00.8+% Fe.	83.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	57.75¢
Copper, reduced	57.75¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd	$3.60
Lead	23.50¢
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	43.50¢
Solder powder 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	91.0¢
Stainless steel, 316	$1.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	$4.05
Zinc, 10 ton lots	17.5¢ to 25.0¢

Luxurious 1955 Packard 400 Hardtop — product of Studebaker-Packard Corporation, Detroit, Michigan.

Packard parts begin life with a Wyandotte bath

In the production of the great new Packards for 1955, Wyandotte products are used in vital cleaning processes: ALTREX* for aluminum soak cleaning; INDUSTRIAL D in spray washers, to remove fabricating compounds and other soils from steel parts; R-2 as an in-process rust inhibitor in spray rinses.

In fact, Packard has been using Wyandotte products for more than ten years — for more effective cleaning at lower use-cost. For in the manufacture of fine motorcars, quality is the foremost requirement — and cost is an important factor as well.

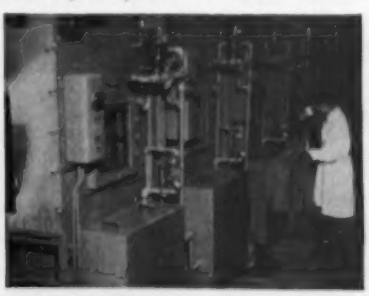
How about *your* business? Wyandotte offers the most complete line of metal cleaners in the industry: for burnishing and deburring; vat, steam-gun, washing-machine and emulsion cleaning; electrocleaning; rust removal; paint stripping; spray booths.

For technical assistance and data, call in your Wyandotte service representative, today. Or write us, c/o Dept. 2315, detailing your needs, along with specifications and requirements. *Wyandotte Chemicals Corporation, Wyandotte, Michigan. Also Los Nietos, California. Offices in principal cities.*

*REG. U.S. PAT. OFF.

Call on Wyandotte to improve quality, cut costs

Packard uses Wyandotte cleaners in small soak tanks, to rid parts of cutting oil and soil; and in spray washes and spray rinses.



Wyandotte scientists can set up or duplicate any spray-washing cycle on this six-stage washer, to help solve your problems.

Wyandotte
CHEMICALS
J. B. FORD DIVISION

Research-developed products for metal cleaning

Ferroalloy Prices

(Effective Aug. 9, 1955)

Ferrochrome

Contract prices, cents per lb contained Cr, lump, bulk, carloads, del'd, 65-72% Cr, 2% max Si.

0.025% C	36.00	0.15% C	33.75
0.025% C, Simplex	34.50	0.20% C	33.50
		0.50% C	33.25
0.06% C	34.50	1.00% C	33.00
0.10% C	34.00	2.00% C	32.75

65-69% Cr, 4-9% C 24.75
62-66% Cr, 4-6% C, 6.9% Si 25.60

S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.

High carbon type: 60.55% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads 25.85
Ton lots 28.00
Less ton lots 29.50

High Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C $1.18
0.50% max. C 1.16
9 to 11% C 1.25

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, 24.75¢ per lb contained Cr plus 12.00¢ per lb contained Si. Bulk 2-in. x down, 25.05¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

Calcium-Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 2.00 max. Fe.

Carloads 19.00
Ton lots 22.10
Less ton lots 23.60

Calcium-Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 20.00
Ton lots 22.30
Less ton lots 23.30

SMZ

Contract prices, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.

Ton lots 17.50
Less ton lots 19.50

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.

Carload lots 16.60
Ton lots 18.10
Less ton lots 19.35

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed 17.50
Ton lots to carload packed 18.50
Less ton lots 20.00

Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	9.50
Clairton, Pa.	9.50
Sheridan, Pa.	9.50
Philo, Ohio	9.50

Add or subtract 0.1¢ for each 1 pct Mn above or below base content.

Briquets, delivered, 66 pct Mn:

Carloads, bulk 11.85
Ton lots packed 13.65

Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.

Manganese	Silicon	
16 to 19%	2% max.	$84.00
19 to 21%	3% max.	86.00
21 to 23%	3% max.	88.50
23 to 25%	3% max.	91.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed 45.00
Ton lots 43.50

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.

Carloads 30.00
Ton lots 32.00
250 to 1999 lb 34.00
Premium for hydrogen-removed metal 0.75

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ..... 21.35¢

Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% P, 90% Mn	32.00	32.85	35.05
0.17% max. C	29.95	31.80	33.80
0.15% max. C	28.45	30.30	31.50
0.30% max. C	26.95	28.80	30.00
0.50% max. C	26.45	28.30	29.50
0.75% max. C, 80-85% Mn, 5.0-7.0% Si	23.45	25.30	26.50

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.

Carload bulk 11.00
Ton lots 12.65
Briquet contract basis carloads, bulk, delivered, per lb of briquet 12.45
Ton lots, packed 14.25

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk Iowa, or Wenatchee, Wash., $85.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $88.00. Add $1.00 per ton for each additional 0.50% Si up to and including 17%. Add $1.45 for each 0.50%Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.

	Ton lots	Carloads
96% Si, 2% Fe	20.10	18.00
97% Si, 1% Fe	20.60	18.50

Silicon Briquets

Contract price, cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk 6.55
Ton lots 8.35

Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.

25% Si.	20.00	75% Si.	14.40
50% Si.	12.00	85% Si	16.10
65% Si	13.50	90% Si	17.25

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrovanadium

35-55% contract, basis, delivered, per pound, contained V.

Openhearth ..... $3.00-$3.10
Crucible 3.10- 3.20
High speed steel (Primos) .. 3.20- 3.25

Alsifer, 20% Al, 40% Si, 40% Fe, Contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads ..... 9.25¢
Ton lots 10.15

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.

Ton lots $6.90
Less ton lots 6.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, contract basis, del'd, ton lots, 2-in. x D per lb con't Cb plus Ta. $4.65

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.46

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $4.00 unitage, per gross ton $90.00
10 tons to less carload $110.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton ltos, per lb contained Ti $1.50
Less ton lots $2.55

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton $177.00

Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. $3.80

Molybdic oxide, briquets, per lb contained Mo, f.o.b. Langeloth, Pa. $1.27
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.24

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per lb.

Carload, bulk lump ..... 15.50¢
Ton lots, packed lump ..... 16.75¢
Less ton lots, lump packed 17.25¢

Vanadium Pentoxide, 86 - 89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.28

Zirconium contract basis, per lb of alloy.

35-40%, f.o.b. freight allowed, ton lots ..... 26.00¢
12-15%, del'd, lump, bulk-carloads ..... 8.00¢

Boron Agents

Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 3.14%, Si, 40-45%, per lb contained 2 .... $5.25

Bortam, f.o.b. Niagara Falls

Ton lots, per pound ..... 45¢
Less ton lots, per pound .... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50%, max. Al, 0.50% max. C, 1 in., x D, Ton lots... $1.20
F.o.b. Wash., Pa.; 100 lb up

10 to 14% B.	.85
14 to 19% B.	1.20
19% min. B.	1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over

No. 1	$1.00
No. 6	63¢
No. 79	50¢

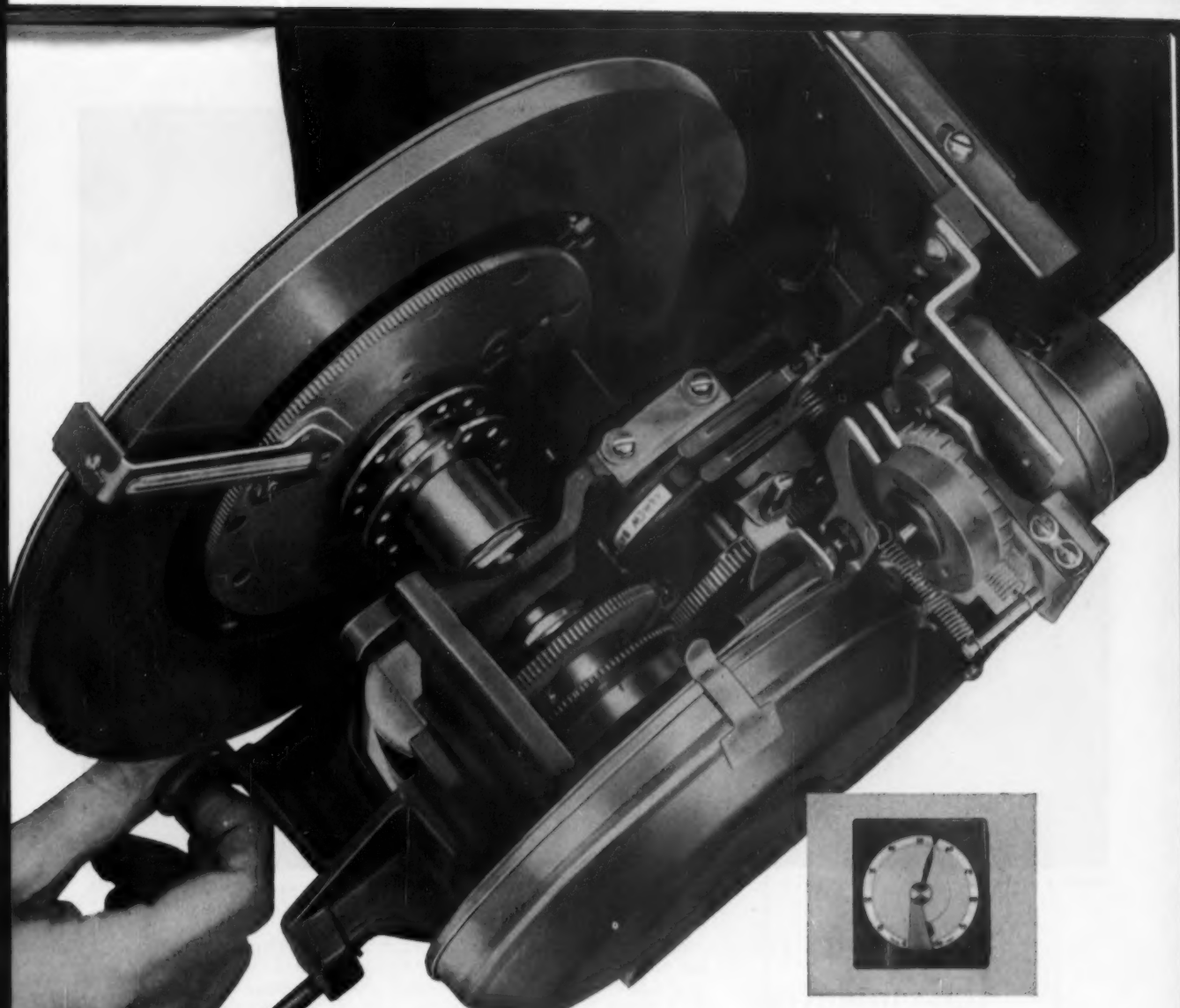
Manganese - Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 2.00% max. C, 2 in. x D, del'd.

Ton lots $1.46
Less ton lots 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots..... $2.05

Silcaz, contract basis, delivered.

Ton lots ..... 45.00¢



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on-the-job economy

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● When you see these null-balance potentiometer temperature instruments you'll know what we mean. Their simplicity of design will reflect in point-of-application savings to you . . . in initial cost, ease of installation and during year-in year-out service.

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JOSEPH P. SPANG JR.

Portrait by Fabian Bachrach

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JOSEPH P. SPANG JR., ***President***
The Gillette Company

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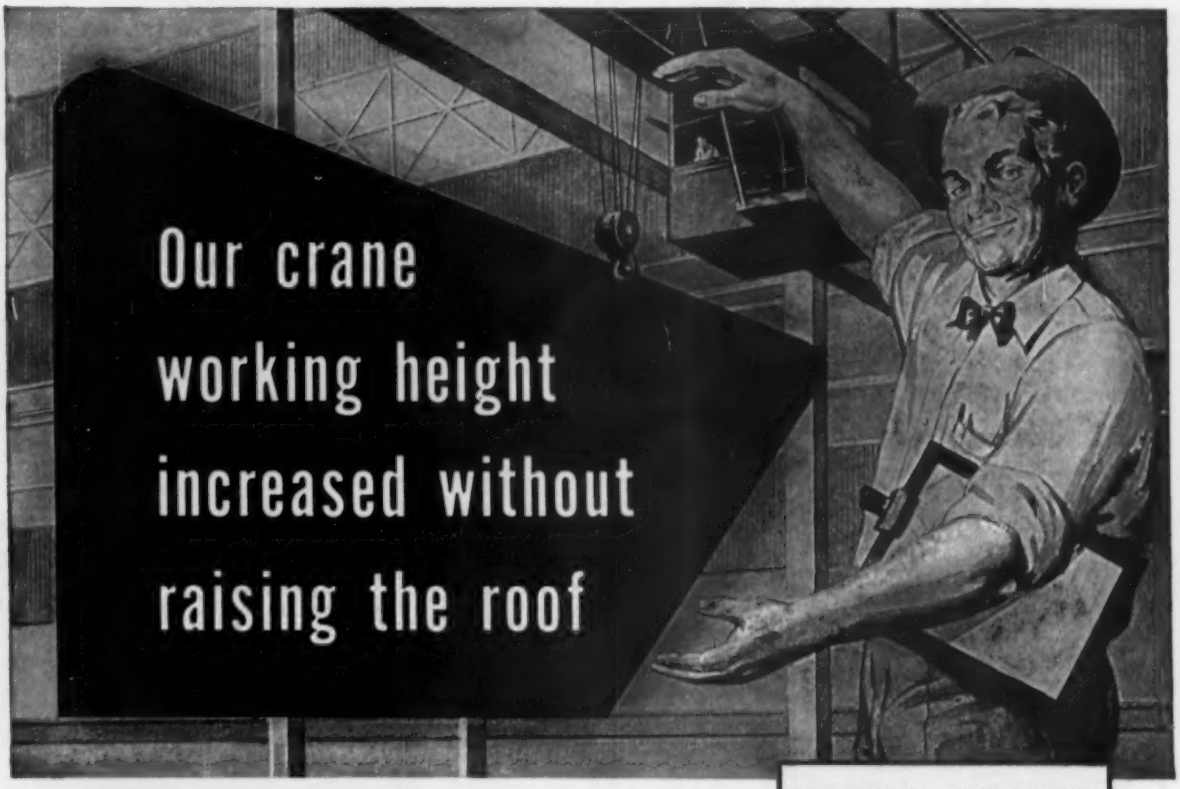

WITH EC&M YOUNGSTOWN SAFETY LIMIT STOPS

"We frequently needed more headroom on our D-c cranes. The limit stop setting couldn't be raised without sacrificing the clearance needed by the hoist-brake to safely stop the fast-moving empty hook, which hoists 2½ to 3 times faster than when hoisting full load. We had a choice . . . we could raise the roof . . . which meant deeper footings, heavier building columns and increased costs for lighting, heating and ventilating . . . OR . . . we could equip our cranes with quick-stopping EC&M Youngstown Safety Limit Stops."

Yes, Youngstown Hoist Limit Stops not only disconnect power from the motor but also apply **dynamic braking** to aid the hoist-brake in a **quick stop** . . . giving less drift . . . more headroom. **Safe,** too, because the tripping point does not change . . . is not affected by stretching of the hoist cables. The point at which the rising crane-hook makes contact to lift the Youngstown suspended-weight always remains the same.

For increased D-c crane headroom, **plus safety,** investigate EC&M Youngstown Safety Limit Stops.

QUICK-STOPPING type of LIMIT STOP gives MINIMUM DRIFT
CIRCUIT-OPENING type of LIMIT SWITCH requires GREATER CLEARANCE FOR DRIFT
THIS SPACE SAVED

Write today for Bulletin 1032 which describes and illustrates EC&M Youngstown Limit Stops.

YOU CAN LIFT LOADS HIGHER AND SAFER WITH EC&M YOUNGSTOWN SAFETY LIMIT STOPS

THE ELECTRIC CONTROLLER & MFG. CO.
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THE CLEARING HOUSE

News of Used and Rebuilt Machinery

Pittsburgh Hums . . . Reversing past trends the used and rebuilt machinery business showed July gains in almost every bracket of the trade in the Pittsburgh area. The only exception was electrical machinery where business was off somewhat from June. But even here July was far ahead of the same month in 1954.

Inquiries and sales maintained the excellent pace set during the second quarter of the year. Inquiries were coming to dealers from points all over the U. S. and export business was much better than normal.

Only problem confronting the trade was inventories. The customer was by and large still the master of the situation, particular about what he was buying and especially price conscious. Business could be even better if dealers were able to obtain equipment that matched or came close to customers' specifications.

All Types Move . . . The greatest demand was for late model equipment with the larger capacities. However, all types of machinery were moving at a healthy pace and even old, somewhat outmoded equipment could be moved if the price was right.

Steel mill equipment sales were quite a bit higher than a month ago and June had been one of the best months in a terrific year to date. A larger dollar volume per sale also reflected the trend for the larger, higher capacity equipment. Sales to fabricating shops showed a marked pickup during the month as order backlogs were building to an extent to warrant newer, additional machinery for greater production.

Crane Sales Jump . . . Crane business was also up considerably over the level set in June. While July showed a marked increase in sales and inquiries, availability of a greater variety of cranes would have pushed the sales figure even higher. The demand for large and small cranes was running about even, but it was not so easy for the dealer to locate the larger capacity cranes. Electrical rebuilders reported a slight slump in orders, which is considered normal for this season, but the month was still way above the levels set in 1954. Here again, the bulk of orders was for heavy equipment motors.

Sell More Tools . . . Machine tool sales for July were running well ahead of the previous month as large and small machine tools received about equal play. This was another boost for the smaller machine tools which have been generally dragging this year.

The smaller shops were reporting a continual pickup in business as the amount of machine shop work available showed marked increase. More and more work was overflowing from the mill shops and the larger machine shops into the hands of the small operators.

Factors contributing to this situation are the increased maintenance required by the mills after prolonged capacity operations, and heavy vacation schedules. In view of what happened during July and on the strength of heavy August inquiries, the used and rebuilt machinery trade is in for a very busy summer.

Prices Rise . . . Rising prices round out a generally bright summer picture for used machinery in the East. Increased new machine prices are one reason for the change; tight supply and strong demand are probably bigger factors.

Prices at the dealer buying level have been fairly strong right along. One source reports late model equipment bringing 55 to 85 pct of new value at auctions throughout the year.

This would indicate an improved profit position for dealers and certainly a strong summer market.

CONSIDER GOOD USED EQUIPMENT FIRST

ANGLE BENDING ROLL
1⅝ x 1⅝ x ¼" Niagara No. 3 Angle Bending Roll Motor Driven Incl. Motor. NEW 1945

BENDING ROLLS
8' x 3/16" Bertsch Initial Type
8' x ⅜" Webb 9L-3 Initial Type
12' x ¼" Hilles & Jones Pyramid Type
14' x [illegible]" Williams & White Pyramid Type
16' x ¼" Bertsch Initial Type Bending Roll
30' x 1" Hilles & Jones Pyramid Type Bending Roll

BRAKES—LEAF TYPE
8' x ¼" Dreis & Krump Size 186
12' x ⅛" Dreis & Krump, Motor Driven

BRAKES—PRESS TYPE
12' All Steel Press Brake, 250 ton Capacity
10' x 3/16" Cincinnati No. 70
10' x ⅜" Cincinnati No. 100-10

CAR PULLER
Clyde Double Drum Electric Car Puller, Capacity 43,750# Max. Starting Pull

CRANES—OVERHEAD ELECTRIC TRAVELING

5 ton	P&H Trav-Lift	30' Span 220/440 A.C.
5 ton	Northern	57' Span 220/3/60 A.C.
5 ton	Toledo	60' Span 230 Volt D.C.
5 ton	Cleveland	90' Span 230 Volt D.C.
10 ton	P&H	85' Span 230 Volt D.C.
10 ton	Niles	52' Span 230 Volt D.C.
10 ton	Shaw	72' Span 230 Volt D.C.
10 ton	Northern	75' Span 230 Volt D.C.
10 ton	P&H	90' Span 230 Volt D.C.
20 ton	Toledo	75' Span 550/3/60 A.C.
125 ton	Cleveland	65' Span 230 Volt D.C.

With 2 Trolley 62½ ton & 10 ton Aux.

DIEING MACHINE
25 ton Henry & Wright, 1⅛" Stroke, Double Roll Feed, Scrap Shear

DRAW BENCHES
50,000# Standard Double Draw, 48' Length of Draw
100,000# Poole Draw Bench, 30' Length of Draw

FORGING MACHINES
1", 1½", 2½" Acme
1", 2½", 3", 3½", 4", 5" Ajax
4", 5", 7½" National High Duty, Air Clutch

FURNACE—HEATING
Induction Heating Corp., Ther-Monic Induction Heater, Model 1400. NEW 1954

FURNACE—MELTING
1½ ton Heroult Side Charge Direct Arc Melting Furnace, Complete with Transformer—New 1942

HAMMERS — BOARD DROP — STEAM DROP — STEAM FORGING—800 lb. to 20,000 lb.

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52" McKay 17 Rolls 3⅝" Dia.
54" Aetna Standard 17 Rolls 4¼" Dia.
60" Aetna Standard 17 Rolls 4⅝" Dia.
72" McKay 15 Rolls 4½" Dia.
76" Voss-Ungerer, 23 Work Rolls 2.165" Dia. Capacity 22 to 12 Gauge Mild Steel

PRESSES—HYDRAULIC
500 ton Wood 4-Columns, 24" Stroke, 72" x 96" Between Columns
500 ton HPM Fastraverse 4-Col. Press, 42" Stroke, 54" Daylight, Bolster 48" x 72"
1257 ton Baldwin Southwark Forging Press, 20" Stroke Main Ram, 84" x 41" Bet. Columns
1300 ton Lake Erie 4-Column, 36" Stroke 48x48" Bet. Columns, 12' Btol. Overall of Bed
3000 ton Williams & White 4-Column Triple Action 36" Stroke, 100" Daylight, 64"x100" Bet. Col.

PRESSES—INCLINABLE
#6½A Niagara, 150 ton, 12" Stroke
Cleveland, 125 ton, 12" Stroke

PRESSES—STRAIGHT SIDE
#204 Bliss, 8" Stroke
#308 Bliss, 225 ton, 14" Stroke

PUNCH & SHEAR COMBINATIONS
Style EF Cleveland, 36" Throat, Punch 1¼" thru 1" No. 16 Pels Universal Ironworker with Coper & Notcher
Style W Cleveland Single End, 60" Throat, 312 Ton

ROLL—PLATE STRAIGHTENING
84" Hilles & Jones, Six Rolls 16" Dia., M.D.

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8" x 12" Blake & Johnson Single Stand Two High
10" x 14" United Three Stand Two High
12" x 16" Waterbury Farrel Temper Mill
14" x 22" Farrel Birmingham
16" x 28" Waterbury Farrel Single Stand 2-High
20" x 36" Poole Two Stand Two High
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18" x 60" 3-High Merchant Bar Mill

SHEARS—GATE
48" x 1¼" Mackintosh-Hemphill
80" x ⅜" Pels
96" x ½" Birdsboro

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6x6x1" Long & Allstatter Size B
8x8x1" Long & Allstatter Size C

SHEAR—BAR
#9 Buffalo Bar Cutter, Capacity 9" Sq., 3⅝" Rd.

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3/16" Quickwork Rotary Shear, 20" Throat
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¼" Quickwork Whiting #40A—NEW 1953
¼" Kling #750, 48" Throat, Circle Cutting Attach.
1" Kling No. 100, 48" Throat, Jogging Rolls Incl.

SHEARS—SQUARING
10' x 10 Ga. Cincinnati
10' x ¼" Niagara No. 810
10' x 12 Ga. Niagara No. 510B
12' x ¾" NIAGARA NO. 1215—NEW 1951

SLITTERS
No. 2 Yoder Slitting Line
36" Yoder Slitting Line with Coilers
36" Paxson Coil & Sheet Slitter
36" Custom Built Slitting Line, with Coilers & Leveler

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#5150J Kane & Roach 5 Roll Straightener, Capacity ⅝" to 1½" dia.
#3 Taylor Wilson Cross Roll Straightener, Capacity ⅛" to 1⅛" Bars or 2" Tubing
#3 HALLDEN STRAIGHTENING & CUT-OFF MACHINE CAPACITY 9/32" to ⅝" dia. Incl. 20' CUT-OFF
#3 Sutton 5-Roll Straightener, Capacity 4⅛" to 12¾" O.D. Pipe

SWAGING MACHINES
#3½ Langelier, Capacity ⅝" Tubing
#8A Langelier, Capacity 2" Tubing

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5,000 lb. Olsen Hydraulic LaCap Universal
10,000 lb. Tinius Olsen Universal
50,000 lb. Baldwin Southwark Comp. Testing Machine
100,000 lb. Tinius Olsen Universal
100,000 lb. Riehle Bros. Universal
200,000 lb. Riehle Bros. 3-Screw Universal

THREAD ROLLER
Model A32 Reed Thread Roller, Horizontal, Capacity Approx. Work Dia. In-feed, Standard Equip. 1" to 4"

TRIMMER
No. 458V Quickwork Whiting Stamping Trimmer

UNCOILER
#60-36 Littell Uncoiler, Motor Driven, Coil Capacity 6000 lbs., Max. Coil Width 36"

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40" No. 16A2 Blanchard 2-spd., rotary, new 1946.
72" Colonial broach grinder, Late.
72" Hanchett 3-spd. rotary surface, new 1946.
16" x 96" Landis gap type cylindrical, new 1941.
13" x 60" Model 300 Hanchett vert. spdl, late.
12" x 24" Cincinnati hyd. universal cyl., late.

LATHES
No. 5 Jones & Lamson ram type univ. turret (2).
14" x 9' Hendey Toolroom, 1940.
15" x 30" Lipe Carbo-Matic, 1942.
9" x 18" Hendey Prec., Tool & Gauge, 1940.

MILLS
1-18 Cincinnati production.
No. 2 Kearney & Trecker plain.
1-2-3-4-5-0 knee type plain & vertical.
42" x 42" x 18" Ingersoll adj. planer type.
60" x 48" x 16' Ingersoll adj. rail planer type.
No. 2H K & T plain horiz., new 1942.

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48" x 48" x 10' Gray Maxi-Service.

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250 ton No. 795½-72 Toledo D.C. Toggle drawing.
350 ton 90" No. 409C Bliss D.C. Toggle drawing.
150 ton No. 13-1 Cleveland OBI, late type.
300 ton No. 1030 Hamilton D.C., adj. bed, 60" x 102".
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545 ton No. H3612½ Hamilton Forging Press.
1000 ton No. 666 Toledo coining or forging.

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1½" Nati. susp. slides, auto-lub. guided ram.
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No. 36 Van Norman Plain, 1942
No. 12 Van Norman Ram Type, m.d., late
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48 Spindle Speeds 10 to 1000 RPM.
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1—20"/24" Wide Continuous Strip and Plate Mill. Motor driven throughout, including all Electrical Equipment and Furnaces. For rolling slabs 20"/24" x 3" x 10' down to plate or strip from 1" to .065" finished gauge. Annual capacity 150,000 tons.

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Plate Shear, "C", Long and Allstatter, 10'x½".
Plate Shear, Long and Allstatter, capacity 6' x 1".
2-A Williams White hydraulic tube bender, capacity 2".
700 and 1000-ton Ajax High Speed Forging Presses, air clutch.
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1½" Ajax Upsetting and Forging Machine, air clutch.
Ajax & National Upsetters, Suspended Slides, 1", 1½", 2", 3", 4".
Upsetting and Forging Machines, Not Suspended Slides, ¾", 1", 1½", 2", 2½", 3".
300-Ton Oilgear High Speed Hydraulic Press, 2-Column, ram 27" x 23".
600-Ton Verson Knuckle Joint Coining Press.
Landis Landmaco Threading machines with lead screws four spindle 1½", two spindle ⅝", two spindle 1", two spindle 1½".
Multiple Punch, Size G, L & A, 940 Ton.
Single and Double End Punches, various capacities and throat depths.

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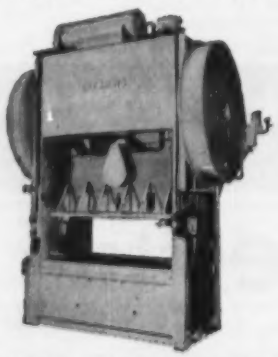

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Cap. 7" square, 7⅞" round, 9¾" x 16" flats, mild steel 65,000 psi
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D. C. MOTORS

Qu.	H.P.	Make	Type	Volts	RPM
1	3000	Whse.	Tandem	550	600
1	2250	G.E.	MCF	600	400/600
2	1500	Whse	Ret.	600	600
1	1400	G.E.	MCF	600	63/190
1	1200	G.E.	MCF	600	750/950
1	1000	G.E.	MCF	600	850/700
1	940	Whse.	QM	250	140/170
1	600	Whse.		250	450/550
1	600	Al. Ch.		250	600/800
1	500	Whse.	CC-214	600	300/900
1	500	G.E.	MCF	250	800/900
8	450	Whse		550	415
1	350	Whse.		250	340/900
1	300	G.E.	MPC	230	600/800
1	300	Rel.	1970T	230	720
3	200	G.E.	CD-1050Z	230	500/1500
1	300	Whse.	CB-5118	230	600/800
1	150	G.E.		600	350/750
1	150	Cr. Wh.	8BH	230	1150
9	150	Cr. Wh.	8BH-TEFC	230	600
1	150	Whse.	SK-151B	230	900/1800
1	150	Whse.	SK-201	230	360/950
1	130	G.E.	MCF	230	250/1000
1	125	Whse.	SK-141	230	500/1500
1	125	Whse.	SK-103	230	850
1	125	G.E.	MD8-416	230	415

M-G Sets—3 Ph. 60 Cy.

Qu.	K.W.	Make	RPM	D.C. Volts	A.C. Volts
2	2000/2400	G.E.	450	250/300	2300/4600
1	1750/2100	G.E.	514	250/300	2300/4600
1	2000	G.E.	500 25cy	660	11000
1	2000	G.E.	514	600	6600/13200
1	2000	G.E.	450	600	2300/4600
1	1500	G.E.	720	600	6600/13200
1	1500	C.W.	514	80/115	4000/13800
2	1000	G.E.	720	600	2300/4600
2	750	G.E.	720	275	2300/4600
1	750	C.W.	514	80/115	2300
1	600	G.E.	720	250	440/2300

TRANSFORMERS

Qu.	KVA	Make	Type	Ph.	Voltages
2	4200	G.E.	POWT	3	13500x115-200
1	3000	Wagner	HPW-30	3	26100x2400
3	2000	G.E.	HVDHJ	1	6600x13200
2	1000	G.E.	HVDHJ	1	2400x480
4	1000	Wagner	OISC	1	13200x440
3	667	G.E.	HH	1	12800x2300

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REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

SLIP RING MOTORS
Constant Duty, 3-phase, 60 cycle

Qu.	H.P.	Make	Type	Volts	R.P.M.
1	2000	G.E.	MT-12	6600	600
1	1250	Whse.	C W	6600	593
1	1200/1500	G.E.	MT-498	2300	857
1	750	G.E.	I-M	2300	600
1	600	G.E.	MT	2300	585
1	600	Whse.	C.W.	2300	414
1	600	G.E.	MT-30	2300	360
1	500	Al. Ch.	ANY	2200	505
2	500	G.E.	I-M	2300	450
3	400	G.E.	I-17-M	2300	875
1	400	G.E.	MT-434	440	360
1	400	Al. Ch.	ANY	2300	505
1	400	G.E.	MT-413	2300	440
1	300	G.E.	I-17-M	2300	580
1	250	G.E.	M-4885-B	2300	1200
1	250	Whse.	CW-987	440	1200
1	250	Al. Ch.	ANY	440	705
1	250	Whse.	CW	2300	450
1	250	G.E.	MT-414	2300	590
1	200	Whse	CW	440	600
1	150	Al. Ch.	ANY	440	705
1	150	Al. Ch.	ANY	2300	600
2	150	G.E.	I-17-M	440	450
1	125	G.E.	I-15-M	2300	600
1	100	G.E.	I-14-M	2300	720
1	104	Whse	CW	440	870

SYNCHRONOUS MOTORS
3-Phase, 60-Cycle

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2	2000	G.E.	80	2300	720
1	1750	G.E.	100	2300	360
1	1000	Whse.	80	2300	360
1	1000	Whse.	80	2300	225
1	800	El. Mchy.	80	440	1200
1	750	G.E.	80	2300	450
2	700	G.E.	80	2300	1200
1	700	G.E.	80	2300	720
1	250	G.E.	80	440	450
1	250	G.E.	100	2300	514
2	200	Whse.	80	440	1200
1	187	G.E.	80	440	720
1	150	G.E.	100	2300	900
1	150	G.E.	100	550	600
1	150	Whse.	80	440	450
2	135	G.E.	80	4000/2300	1200
3	125	El. Mchy.	100	4000/2400	900
1	125	G.E.	80	2300	900
2	100	Whse.	80	440	1200
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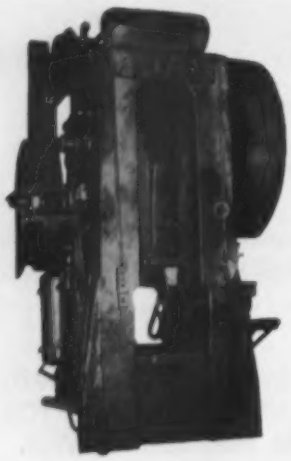

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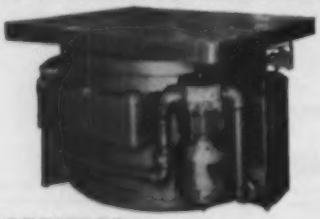

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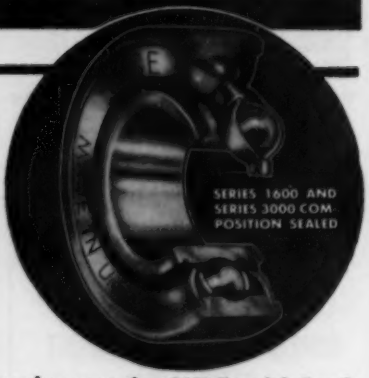

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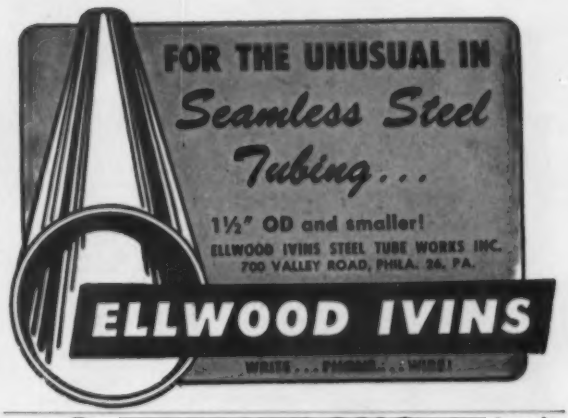
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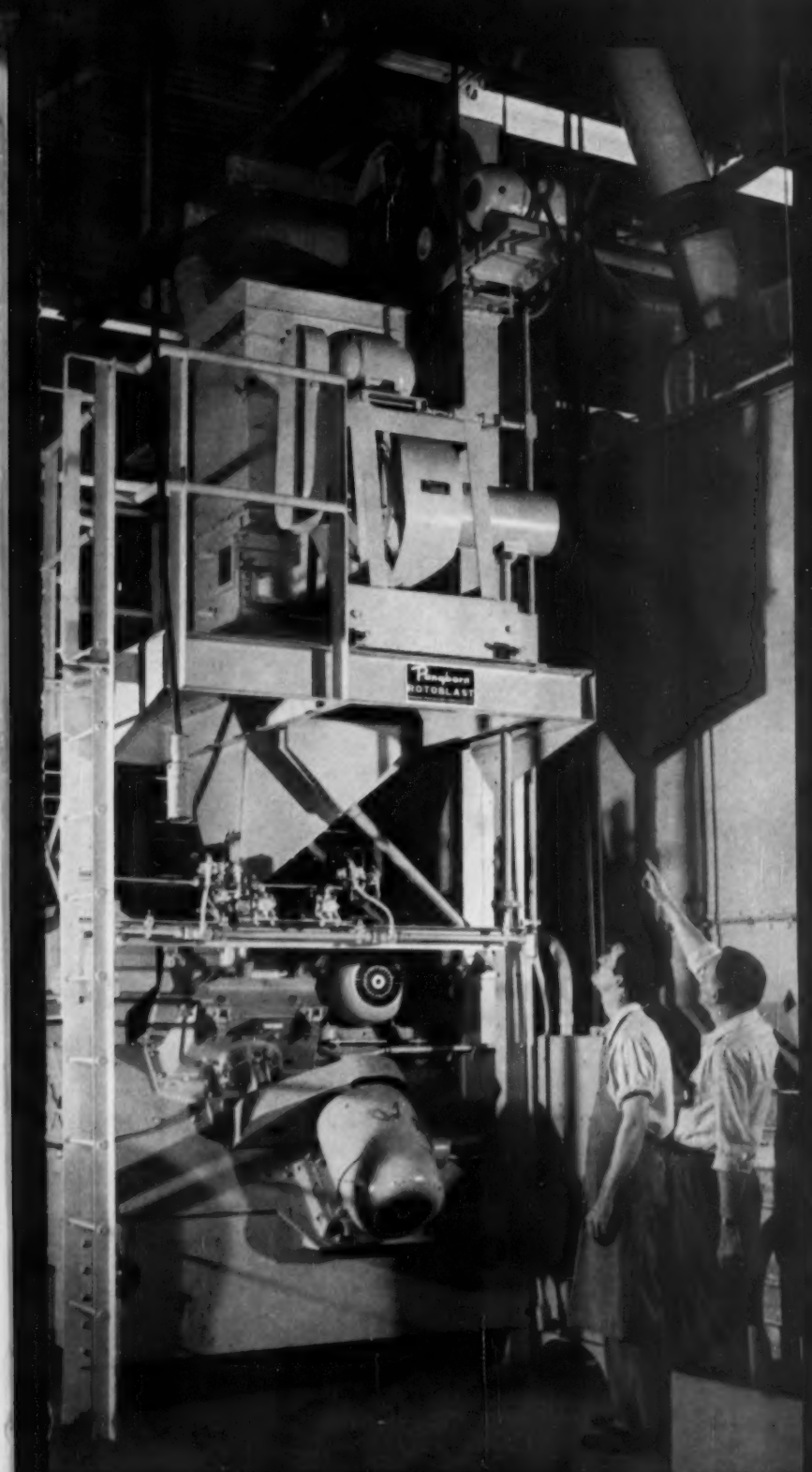

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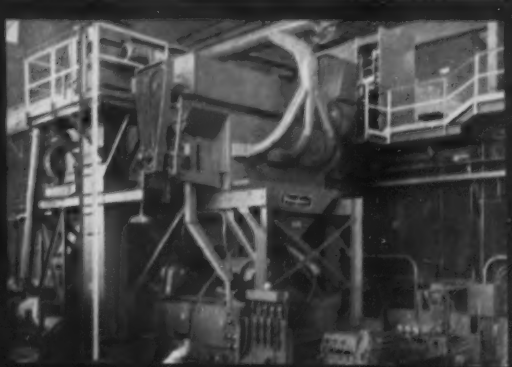

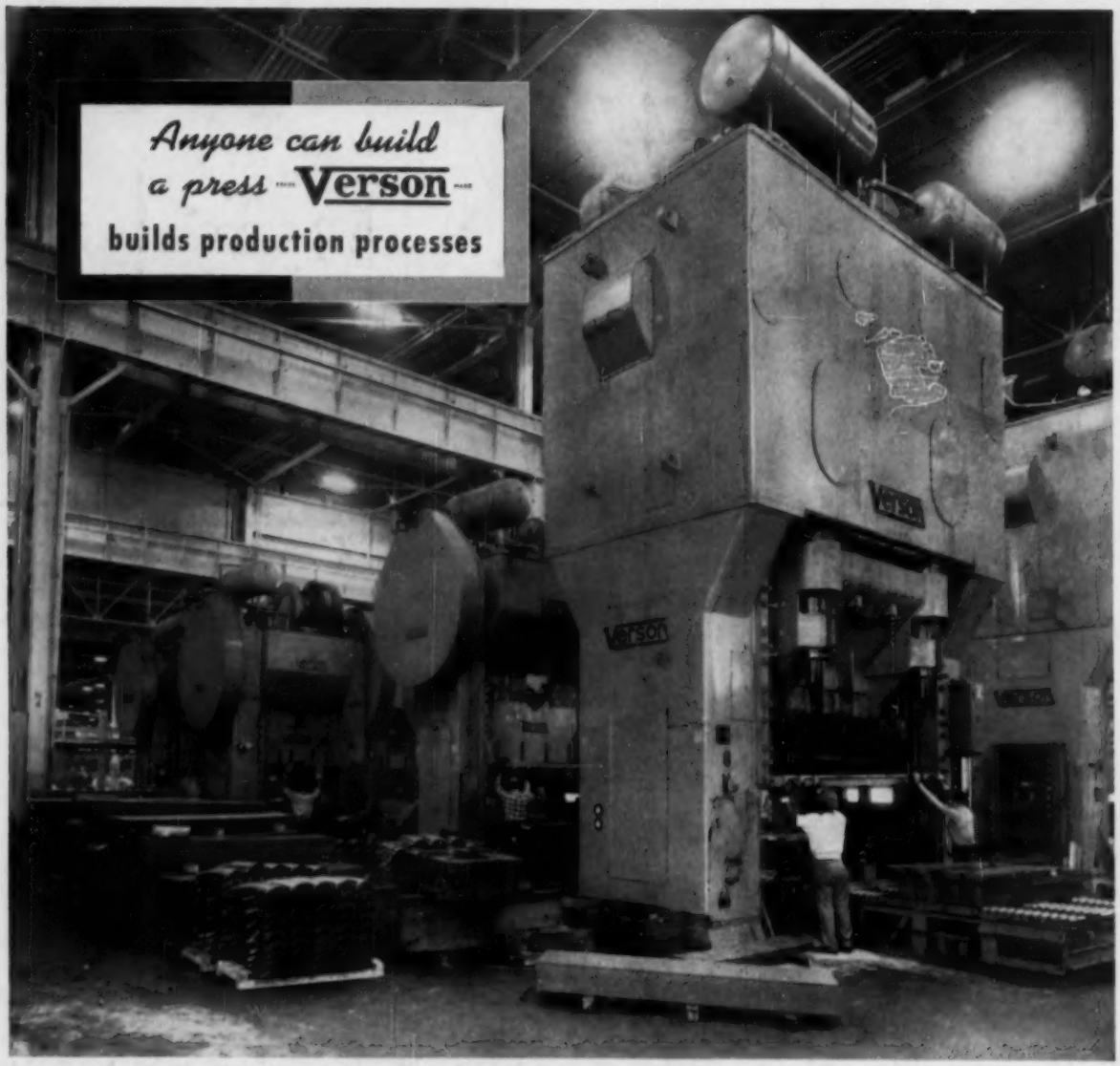

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